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DERBY FLYCATCHER
PITANGUS SULPHURATUS
One-half natural size
Painting by Andrew Jackson Grayson

THE CONDOR

VOLUME 53

SEPTEMBER-OCTOBER, 1951

NUMBER 1

A STUDY OF NESTING WOOD DUCKS IN IOWA

By FREDERIC LEOPOLD

This article concerns the nesting habits of the Wood Duck (*Aix sponsa*), including nest site selection, egg laying, incubation, hatching, departure from the nest, and travel of the brood to water. The material is taken from notes covering over 2500 nesting box checks plus many hours of watching from a portable blind or other vantage point, in the course of 12 years, beginning in 1939. At that time the Illinois Natural History Survey furnished 50 Wood Duck boxes to the Crystal Lake Club near Burlington, Iowa, on the Mississippi River bottoms. For four years I helped make semiannual inspections of these boxes. Ducks used only a small percentage and few were successful due to predation by raccoons and other animals.

In 1943 three boxes were moved to my yard, where a single pair of Wood Ducks had been seen prospecting for a nesting site. To my surprise and delight, each of the three boxes was used by the ducks and successful hatches resulted in each case. Subsequently, the project at my home was expanded by hanging additional boxes. In recent years the nesting colony has grown to include 10 to 12 pairs, as shown in table 1.

Table 1
The Growth of the Nesting Colony from 1943 to 1950

Year	Number of nests	Number of available nest sites
1943	3	3
1944	5	8
1945	9	14
1946	6	14
1947	8	14
1948	12	15
1949	10	15
1950	11	17
—		
64 total		

The study area is within the city limits of Burlington, extending one city block along the bluffs overlooking the Mississippi River, which at this point is half a mile wide. The bluffs are about 130 feet high and very steep, in part precipitous. They are overgrown with brush and wild grape. Along the foot of the bluffs runs a single track railroad, the fill of which pitches directly into the river except at low water stages. All broods must descend the bluff and cross the tracks to reach the river. The yard where the boxes are located extends for a block back from the edge of the bluff. Our trees are large, being a mixture of hardwoods, larch, spruce and pine, most of them planted about 70 years ago.

Across the river in Illinois are broad bottoms with timber, lakes and sloughs. This

is the feeding, mating and resting ground of the breeding ducks, as well as the rearing area for most of the broods.

Throughout the eight seasons of my backyard Wood Duck observation, I have made it a point to keep the study on as nearly a natural basis as practical. When an oversized clutch of eggs was laid, I could have transferred eggs from nest to nest and thereby increased production but I have refrained from such interference. However, when squirrels have used the boxes, I have removed their nests because often they com-

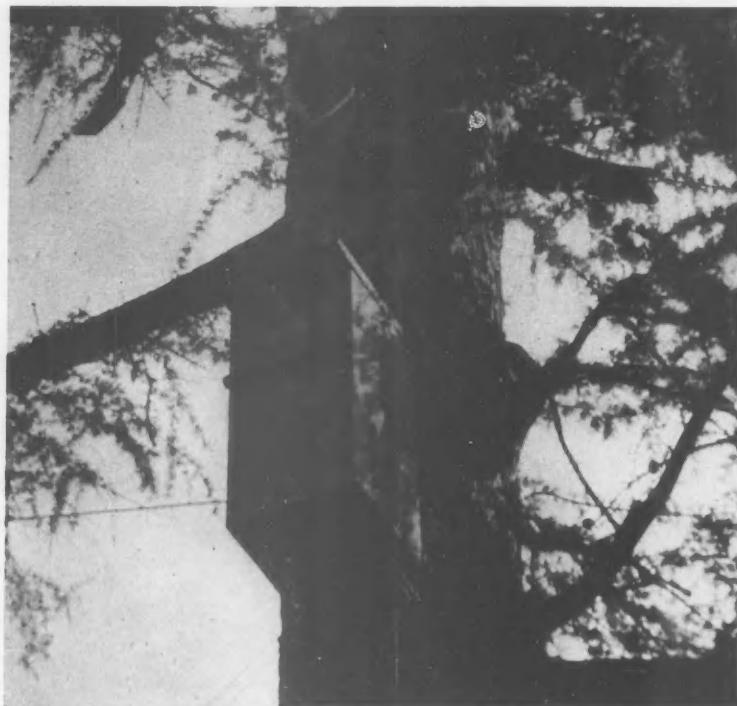


Fig. 1. Female Wood Duck in the entrance hole of nest box.

pletely filled the box. Gray squirrels in considerable numbers live in the neighborhood, but for reasons unknown to me, they have destroyed no duck nests. Other predators are either absent or unimportant. Neither raccoons nor opossums frequent the area. Barred Owls sometime spend winter days in the evergreens where they are well hidden. Screech Owls use the boxes in winter as roosts and occasionally for nesting. Snakes are rare and make no trouble. A flicker once nested in a duck box, and in 1948 flickers broke a few eggs in one nest. In short, nest predation is slight in my area as compared to wild conditions where a high percentage of duck nests normally are destroyed. This factor, I believe, accounts in part for the fairly steady increase in the nesting colony studied.

METHODS

Nest boxes.—All the boxes used were copied from the design used by the Illinois Natural History Survey. The material is rough, one-inch lumber. Outside dimensions are 12 by 12 inches with a height of 24 inches. The lid is flush at back and sides but projects about two inches at the front. It is held in place by two screen door hooks plus an inner lid which fits loosely into the inside of the box. The entrance hole, four inches in diameter, is located four inches below the lid (fig. 1).

The box is attached to the tree by means of a hanger bolt which is first screwed into the tree. This bolt passes through a hole in the back of the box located opposite the entrance hole. A large iron washer plus a heavy wing nut on the end of the hanger bolt provide a rigid fastening when tightly drawn. On a fast growing tree the wing nut can be loosened a few turns after a year or two if the washer is biting into the back of the box.

One refinement has been added to the original box. I have nailed small wooden cleats at either side of the entrance. The upper half of each cleat is slightly tapered away on the inner face so that a fine strand of vegetation about 10 inches long can be wedged between the cleats and the face of the box. This strand, which is made of the inner bark of basswood shredded into fine pliable fibers, passes across the center of the entrance hole. One end of the strand is wedged tightly behind its cleat, the other end laid loosely behind the other cleat. In this way the "gate" does not interfere with the passage of the bird and remains available for repeated use. The closed position shows that no duck has passed, while the open position indicates that the box should be inspected and the "gate" reset.

During egg laying and incubation this device is useful in securing information with a minimum of disturbance to the duck. Records which might require hours of watching, and which it would be impractical to get where a good many nests are being followed at one time, can be secured by observing the open or closed condition of the "gate." The device, of course, is useless except when making frequent inspections, particularly on active nesting boxes.

Most nesting boxes are hung so that they are in easy reach with a 16-foot ladder. This appears to be high enough to satisfy the ducks.

A minimum of four inches of decayed vegetation from my compost pile is placed in the bottom of the box so that the ducks can bury their eggs and later form their nests. Leaf litter will also do but coarse sticks should not be included. The ducks carry no nesting materials.

ARRIVAL OF THE DUCKS

The arrival of the Wood Ducks at the nesting site varies with the weather from year to year. The first ducks usually are observed in my yard from March 15 to April 1, with the last few days of March the most frequent time. Wood Ducks are seen in the swamps across the river several days to a week prior to their appearance in the nesting area.

When the ducks prepare to nest, the pairs are seen sitting in the leafless trees near the boxes during the first half of the morning. They sometimes stay in one tree for a considerable period, either quite motionless or walking slowly along a larger limb in a rather awkward, pigeon-toed manner. In spite of their size, they are difficult to see even in the bare trees where they blend with crooked limbs or other irregularities.

The hens investigate the nesting boxes but spend more time on the tree limbs than inside the boxes. If not too frequently flushed, they may eventually nest. The first evidence of occupancy is a cup-shaped depression in the litter. A single female may try several boxes in this manner before choosing one to be used for her nest.

Strange sites are sometimes investigated by the ducks in their quest of a suitable nesting spot. One pair repeatedly sat on the top of an unused chimney peering down the flue. In another case a neighbor found a dead female above the damper in his fireplace flue. I observed no signs of territorial disputes between pairs.

THE EGG LAYING PERIOD

As soon as the hen starts laying, the cup-shaped depression disappears, for the early eggs are covered with litter. This often results in a low pyramid near the center of the box completely covering the eggs.

Eggs usually are laid during the hour or two following sunrise. The members of a pair come together to the nest area. They may both sit in nearby trees for a time, or the hen may go directly into the nest, while the male waits a short distance away. While waiting, the male sometimes makes a very quiet call which is similar to the male goldfinch "sv-ee-ee-t" call. This is repeated several times. To hear this call the observer must be very close. I first noted it while watching with binoculars, with the aid of which I could see his bill open and slowly close again.

Table 2
Dates of Appearance of First Eggs in 61 Nests

Period	1943	1944	1945	1946	1947	1948	1949	1950	Total
March 23-31	—	—	2	2	—	—	2	1	7
April 1-15	—	2	—	2	4	6	5	4	23
April 16-30	3	1	2	1	—	1	1	1	10
May 1-15	—	1	—	1	2	4	1	3	12
May 16-31	—	1	2	—	2	—	1	1	7
June 1-20	—	—	1	—	—	—	—	1	2
									61

During the early part of the egg laying period, the time spent in depositing the egg is sometimes as short as five minutes. Considering the fact that the new egg must be covered, this is certainly expeditious. On emerging from the hole the hen usually flies away, followed by her drake, not to return until next day. Toward the end of egg laying the hen spends considerable time in the box.

The normal rate of laying is one egg per day, although occasionally a day will be passed without a new egg. Only 13 days were skipped in the laying of 297 eggs, which gives an average of .96 eggs per day. Most clutches are completed without deviating from the egg per day schedule.

Omitting dump nests in which two or more hens have laid, the average clutch proved to be about 11.8 eggs. Early clutches, initiated in late March or in April, were larger (13.9 eggs) than May clutches (11.0 eggs). The latter group doubtless included some second nesting attempts, and it is well known that among many game birds second clutches tend to be small. The data in table 3 include dump nests, thereby accounting for the large average size of clutch (14 eggs).

Plucking of down, which serves to keep the eggs warm during incubation, starts with the fourth to as late as the tenth egg. In 70 per cent of the nests the first down appeared with the sixth to the eighth egg. The rate of down accumulation is on an ascending scale. The first day that down is found there may be only a very small amount such as could be held in a dessert spoon. The amount added increases daily until, during the three or

four days immediately before incubation, 50 or more cubic inches may be added in the course of a 24-hour period.

Most first nests contain about 200 cubic inches of down by the end of the egg laying activities. In an early nesting, the down will be nearly pure, containing practically no breast feathers. In the case of a renesting bird, there is a reduction in the volume of down, often dropping below 100 cubic inches and in one case, down to only 25 cubic inches. Many breast feathers may be mixed with the down.

DUMP NESTS

Dump nests are identified by several criteria: (1) Eggs are left uncovered; (2) several eggs may be laid on the same day; (3) normal down is missing unless one or more hens adopt the nest as their own and proceed to incubate; (4) clutches are abnormally large and often are unsuccessful in hatching.

I believe some dump nests result when nests of birds in the egg-laying phase are destroyed. The hen, having a supply of eggs in process of development, needs a place to lay. Therefore, she uses any convenient nest and after dumping a few eggs may select a new site and proceed to lay a clutch in a normal way.

I observed one dump nest in 1948 that received four eggs on April 30, two on May 1, one on May 2, one on May 3 and none thereafter. Coincidentally, I had new nests receiving their first eggs on May 1, 2, and 4, respectively. Probably three of the four ducks laying in the dump nest on April 30 subsequently started individual nests of their own.

INCUBATION

Some females spend four or even more nights in the nest before the clutch is completed. Until the season of 1947, I went on the assumption that when I saw a hen enter her nest in the late evening, and, on checking my "gate" by flashlight later in the night, found her still on the nest, she was starting to incubate her eggs. The fact that later checks showed eggs had been added since her first night in the nest confused me, but I presumed that an outside bird had dropped the additional eggs while the hen was off on her rest flights.

In 1948 I found that the eggs that had been added probably were laid by the occupant and that more often than not she would stay off the nest through the day and therefore obviously was not incubating. I checked this theory by candling eggs from each of several nests where the female had spent the night on the nest and the following day off. No development was visible in the eggs even after four such successive nights. However, as soon as the eggs had been kept warm for a full day and night, the egg development was immediately noticeable. Therefore, I feel that the period of incubation does not start until all eggs have been laid and until the hen is ready to keep them warm for a 24-hour period. Incubation would conclude its first full day on the morning subsequent to the appearance of the last egg, except for an occasional hen that may take one or more days off after depositing her last egg before starting to incubate.

The relative position of eggs in the clutch changes constantly. By marking each egg that lay on the perimeter of the clutch, I found that in one-half day, two or more of the outer eggs in the group would be replaced by unmarked eggs, indicating not only a rolling of the eggs but an actual trading of positions. This explains why abnormally large clutches, usually laid by several ducks, may not hatch well, for as eggs take their places on the outer edges there is insufficient warmth and the embryo may die. As many as twenty eggs may be incubated successfully by a single hen (table 3), but in such large clutches the percentage of success is usually low.

Routine of the female.—The normal behavior of the duck during incubation is to leave the nest for feeding, water and relief twice daily, in the early morning and late afternoon. The direction of flight on leaving is substantially uniform for a given bird, possibly because she seeks her mate in the same general area each time she leaves. The hen may give her screaming cry after she has flown several hundred yards from her nest, presumably in an effort to communicate with her mate.

Incubating hens usually move out on their morning rest flight very early and return to the nest before laying hens reach the nesting area. This is not universal but it is general practice and may account in part for the fact that few eggs are dropped into nests

Table 3
Summary of Data on 63 Nests

Size of clutch	Number of nests	Total eggs	Eggs hatched	Eggs infertile	*Other egg losses
7	1	7	6	1	—
9	4	36	25	8	3
10	6	60	57	1	2
11	10	110	99	5	6
12	7	84	68	3	13
13	8	104	89	3	12
14	7	98	90	6	2
15	4	60	50	2	8
16	4	64	52	4	8
17	2	34	30	—	4
18	2	36	35	—	1
19	1	19	19	—	—
20	2	40	39	—	1
21	2	42	—	?	42
24	1	24	20	—	4
25	2	50	10	3	31
<hr/>		<hr/>	<hr/>	<hr/>	<hr/>
Totals	63	868	695	36	135
Percentages		100	80	4	16

*Other losses are composed largely of eggs wasted in dump nests plus a smaller number of eggs laid by outside females after the balance of the clutch is in incubation.

of incubating hens by outsiders. Morning rest flight often starts as early as an hour before sunrise when there is just a faint sign of dawn in the east. On the evening flight the hen usually departs between five and six o'clock and returns before seven.

Duration of rest flights varies from forty minutes to two hours with slightly over an hour a fair average. Before leaving, the down is spread evenly over the eggs.

The custom of two rest flights per day is not always followed. Sometimes a duck may, for a number of days, take only one rest period per day. This may be either in the morning or evening and the same bird may switch from only morning flights to only evening flights or to two rests per day.

Inspections during incubation should, so far as practicable, be made during the time of the rest flights. However, no serious interference is caused even though the hen happens to be at home. Individuals react differently when the inspection is made. The mere placing of the ladder will flush some hens. Others, on having the lid raised slightly, will crane the head up toward the intruder and, opening their bills wide, utter threatening hisses. Others hold their heads low and "freeze." Any one female is apt to be quite constant in her reaction to an inspection. I have had only one nest deserted on account of my inspection.

The down is usually sufficient to cover all the eggs to a thickness of from one and one-half to two inches, and can be raised without breaking apart, by lifting carefully from one edge. The insulating value must be substantial in order to keep the eggs warm during the hen's absence. When the hen is on the nest, the down forms a border around the eggs so that the heat is retained around the edges.

Despite long continuous periods on the eggs, the nest is seldom dirtied, and then usually as a result of frightening or flushing the hen from the nest.

Attention of drakes to incubating hens.—When returning to the nest the incubating hen is followed in flight by her drake. She usually flies directly to her hole and immediately enters, in fact, she brakes so close to the box that it is surprising she can stop in time. No calls are made by either bird when approaching the nest. The drake usually follows until close to the nest but at times will leave her at quite a distance. Infrequently he may perch nearby momentarily, or even for five or ten minutes, before leaving. The beauty of the flashing drake as he swings by, having escorted his lady home, is a charming memory for a winter evening.

The attendance of the drake does not usually continue throughout the incubation period. Generally, during first nestings (April and May), the drake attends the hen and returns to the nest with her until the fourth week of incubation. Among ten pairs kept under close observation throughout incubation, seven drakes abandoned the hens in the fourth week (22 to 28 days) and two others probably did likewise. However, I have one record of a drake which flew in from a nearby tree, where he had been sitting unseen, and alighted on the lid of the nesting box while the ducklings were jumping out, the hen being on the ground at the base of the tree. He drove away a curious Blue Jay from a branch a few feet from the nest box. This drake was probably parent to the brood, for the hour being mid-morning, no other drake would ordinarily have been about.

The breaking off of attendance on the hen by the drake near the end of incubation may be due to the fact that the hen no longer seeks her drake while off resting, or perhaps to a loss of interest on the part of the drake. In late nests, during June or July, the drake may abandon the hen immediately after egg laying has been completed. I have never seen the drake incubate the eggs. In fact, I have never seen the drake enter the nesting box at any time.

Duration of incubation.—As the hatching date approaches, an examination of the eggs by ear detects the first sign of life in the form of a watery gurgle, or sticky sound, as the duckling moves within. A day or two later peeping is heard. From the time the first crack or pip is visible it takes two days for the duckling to release itself.

Using the date on which the last egg was laid, or the first full day on the nest, whichever was later, as the beginning of incubation on 35 nests on which I have good data, I obtained the spread in incubation period shown in table 4. It is evident that there is substantial variation in time required to complete incubation, well over half of these nests deviating from the mean period of 30 days. Factors which may contribute to this variation are: (1) number of daily rest flights by the hen; (2) duration of rest flights; or (3) amount of down available to protect the eggs during rest flights.

The duck evidently has no automatic release which prevents her from continuing to incubate eggs which are no longer alive. In 1947 I had one nest of 21 eggs in a natural cavity where the eggs had too much room to spread out and, as a result, the embryos all died rather early. This duck started incubation on April 15 and continued until June 16, a total of 62 days. Upon examination at that time I detected a very bad odor, not noticed previously, resulting from the breaking of one or more of the rotten eggs.

At the time, I considered that the odor from a broken, decayed egg might have caused

the hen to quit the nest, but an experience in 1949 indicates that sense of smell must be unimportant to a Wood Duck. In this case, during the laying period, one egg had been added each day for the first five days. For the next five days, two eggs were added each day, making 15 eggs. Two additional eggs were then added a day or two later. Incubation began on April 24. Nest checks were made on April 25, 26, 27, 28 and 29 with nothing unusual noted. On May 17 the box was inspected and the hen found on the nest when the box lid was slightly raised. My notes state: "Very bad smell in nest, hen active." On May 19 another inspection, made while the incubating hen was absent, disclosed a dead female on one side of the nest. The carcass was very light weight, with

Table 4
Observed Periods of Incubation in 35 Wood Duck Nests

Days required to incubate	Number of nests
27	1
28	6
29	5
30	13
31	6
32	3
33	1

practically all the flesh and intestines gone. There were five eggs under the dead bird, all of which adhered to the carcass as I removed it. The remaining 12 eggs were warm. Eleven of them hatched on May 26. So the successful incubating hen must have attended the eggs regularly during the time that the dead bird was decaying by her side.

Another odd experience concerns a hen incubating a clutch of nine eggs. This hen started incubation on May 4, 1945. On May 31 I discovered she had an open hole in her upper mandible about two-thirds of an inch from the tip, the size being one-quarter inch long by three-sixteenths inch wide. The bird's tongue was plainly visible through the hole. The edges of the wound were white but no odor was detected. On June 3, four eggs were hatched. There was no clue to indicate what may have caused the injury nor do I know when it occurred. The urge to bring off her brood was strong enough to keep this crippled bird at her incubating duties until the eggs hatched even though she must have had considerable trouble in feeding herself.

HATCHING

I believe the period between emergence of the first and last ducklings from the shell is probably not longer than four to six hours. The mother seldom leaves during this time or, indeed, until the ducklings are dry and active. The discarded shells are very brittle and disintegrate rapidly into small particles. The tough membrane within the shell separates into two nearly equal halves. These membranes enable one to count the number of ducklings hatched in the brood even though the number of eggs had not been known previously. No broken shells or membranes are removed from the nest by the mother.

The down in the nest box is much reduced in volume as the hatch progresses, being solidified by contact with the wet ducklings and membranes.

An inspection made while the hen is on her brood frequently discloses several perky little heads peeking out from under the mother. These ducklings are always quiet, never peeping or moving, while being inspected. If the mother is off, the first impression is of

an empty nest. All ducklings are "frozen" on the floor, forming a solid black-brown mat. The lighter belly and cheek markings are hidden completely, the heads being tucked under or between other members of the brood. In watching for several minutes under these conditions not a flicker of movement can be seen. Stirring the ducklings only makes them cling tighter to the nest floor.

Newly hatched ducklings may be lost in a variety of ways, as I found, to my great regret, several years back. In one nest, five healthy ducklings were deserted because they had not been able to climb to the hole, since the lumber from which I had built several new boxes was not rough enough to give them a secure toe hold. I watched for over an hour from my portable blind while the hen wandered around under the tree calling to the nestlings and followed closely by the ducklings that had succeeded in joining her. She finally had to leave the five young in the nest. Seeking to prevent a repetition of this tragedy, I decided to cut a strip of old carpet to serve as a gangplank up to the exit hole when the next brood was ready to leave. On this occasion I watched from my blind until the duck left her brood for her morning rest flight. Then I climbed to the nest and fastened the strip of rug in place with three small tacks, each requiring only two or three light taps of a tack hammer. I immediately closed the lid and climbed down the ladder. As I removed the ladder, the first duckling appeared at the hole and jumped out. In a moment all 11 young were on the ground around me peeping loudly and scattering through the Lily-of-the-Valley foliage surrounding the tree. Very evidently the "freezing" reaction had broken down under the stress of the tack hammer blows on the box. The hen never found these scattered young.

DEPARTURE FROM THE NEST

Newly hatched Wood Ducks have tremendous vitality, stamina and physical agility as soon as the egg moisture has dried and they are able to stand on their own feet. The ducklings are never fed or watered while in the nest. For this reason and for the safety of the young from predators, the exodus from the nest takes place the day following hatching.

On the day the ducklings are to leave the nest, the duck takes her customary early morning rest flight, returning as usual and entering the nest to brood her young. If the weather is warm and bright she will prepare to take off her brood rather early. Under these conditions she waits until the sun is an hour or two old so that dew and ground dampness is pretty well gone. On rainy or very chilly days, she may wait several hours, or even half a day, before starting to move her young.

When she feels that conditions are right, she will appear in the entrance hole. At first, usually only her head and neck protrude. She remains motionless in this position for several minutes while she scans the landscape, presumably for signs of danger. If frightened by sight or sound of human beings, she drops back for 15 minutes, more or less, before looking out again. If the coast appears clear she usually will drop back anyway for a short period. This goes on for an indefinite time. If no danger appears it may be only half an hour before she is ready to call out her brood. On the other hand, I have waited from early morning until past noon on occasions when neighborhood activities disturbed the anxious mother. All during this period neither duck nor duckling makes a call that can be heard from a distance of 20 or 30 feet.

When, at last, she decides to bring out her young, she makes a call or cluck that is difficult to describe. "Kuk, kuk, kuk" is repeated softly either from the nest entrance or a nearby limb or from the ground near the base of the nest tree. At once the ducklings can be heard peeping from the interior of the box. Very soon the first baby will appear

at the hole, balancing there momentarily and sounding off with a staccato "pee, pee, pee, pee" repeated rapidly eight or ten times. Then, with tiny wings extended, the little fellow springs out to alight on the ground with a thump two or three feet from the base of the tree. If no obstruction is encountered in the drop, he strikes on his breast and is immediately on his feet. If he is deflected by a twig or other object in falling, he may strike the ground on his back or elsewhere and, in so doing, may be momentarily stunned. But, I have never seen a duckling injured to a point where he was unable, after a moment, to use his legs actively, in spite of the fact that many actually bounce several inches on striking the ground, particularly when short-cut grass has allowed the earth to bake rather hard in dry weather.

I have watched 15 or more broods leave their nest and have never seen any duckling reach the ground by any other means than jumping. In all but two instances the hen has been on the ground near the tree during the full time that the young were leaving the nest. In one case the hen sat on a limb nearby calling until three or four ducklings were out when she joined them on the ground. In another case, involving a single natural tree cavity which has a rather large opening, one duckling jumped from beside his mother as she gave her call to the brood before she dropped to the ground.

The length of time involved in the exodus from the nest varies with the ease with which the young can reach the entrance. There is practically no hesitation at the entrance as each one jumps. With the one natural cavity where the nest floor is only a few inches below the hole, I have seen a brood of a dozen jump out in one minute. Sometimes two were in the air simultaneously. In the case of the nest boxes, most broods will succeed in getting out in five to ten minutes.

While waiting for her brood to leave the nest, the female walks about nearby, followed by the young that have joined her, as closely as though they were her shadow. As each new arrival straightens up after his drop, he hears her call or sees her and hurries along to join up. If there is ground cover nearby, the hen will lead her young there to wait, sometimes leaving the cover to meet a new duckling and then returning again to cover.

If the mother is frightened during the exodus, she will leave at once with what ducklings she has, deserting those in the nest. It takes considerable pressure to make her leave her little group of young once they have joined her.

On numerous occasions I have noted that as soon as the last duckling has left the nest, the female immediately starts her brood on the trip to water. She probably knows when to leave because she no longer hears young peeping in the nest. In all the broods I have observed, the mother has only once returned to the nest after the first young has jumped.

I believe the strongest and most active ducklings are generally the first to jump. They, therefore, are the most valuable because they are most likely to survive the perils of infancy.

TRAVEL TO THE WATER

The period, starting when the hen calls the ducklings from the nest and extending to their arrival at the water, is the most dangerous and vulnerable period in the life of a Wood Duck. Losses during this usually short period are tremendous (table 5). Whole broods are sometimes lost and partial losses are very frequent. In my study area, the principal causes of these losses are human interference, tardiness in leaving the nest box, and failure to keep up with the mother and the main group. Under wild conditions, predation and the necessity of extremely long travel must also take their toll in lost ducklings.

To reach the river from my area two routes are available, one at each end of the property. The whole center portion of the bluff frontage is occupied by an old stone quarry which would involve a 30- or 40-foot vertical drop to the quarry shelf. The duck never leads her young over this section.

In travelling to the cover along the edge of the bluff, the female always leads her young along routes where the best concealment cover is afforded, never crossing open areas when a longer route through cover is available.

After the brood disappears in the dense vegetation at the top of the bluff, my next sight of them is usually when they reach the railroad. The short trip down is beset with many obstacles and difficulties in the form of dense growth of grey dogwood, box elder, annual and perennial weeds, grape tangles, brush piles and the steepness of the terrain

Table 5
Ducklings Lost in Leaving the Nest and Moving to Water

Live ducklings in nest	Ducklings reaching water	Losses
10	7	3
11	—	11
11	—	11
11	10	1
13	7	6
15	14	1
14	9	5
18	17	1
11	6	5
14	14	—
10	10	—
11	11	—
13	11	2
13	12	1
14	—	14
<hr/> Totals	<hr/> 189	<hr/> 61
Per cent	67	33

itself. I descend the bluff at the end opposite the route taken by the duck. On reaching the tracks, I hide myself about 30 or 40 yards from where I expect them to cross. The brood makes the trip down in about five minutes which gives me just time to hide myself properly before their arrival.

On arrival at the railroad the behavior of the hens may vary considerably. Some hens lead their young out into the open and proceed to call the ducklings across the rails, one rail at a time. The young have no great trouble in jumping over the rails, perhaps failing a time or two, but soon getting over in good shape. Other females seem to doubt the ability of the young to climb the rails, or perhaps, they only fear the danger involved in crossing an open area. In such cases the group may travel quite a distance parallel to the track before crossing. In 1948, one hen led her young 200 yards along the track before she found a spot where the ballast between the ties was partly missing so that the ducklings could pass under both rails instead of jumping over.

Only twice have railroad trains or engines caused complications. Neither time were the young in process of crossing the rails as the train arrived. In one case the hen flushed as the train approached. In the other, the hen remained with her young allowing the engine and train to pass within eight feet. I know she and her brood were that close to

the train because the bluff bank, at this point, is so steep that the ducklings could not possibly climb up to move farther away. The hen and brood crossed the track after the train had gone.

Once the family successfully negotiates the crossing of the railway, they have only to travel a few yards to the river. If the stage of the water is fairly high, so that water extends back into the weeds and brush along the base of the railroad embankment, the observation period is over and the young are in relative safety. They can feed and hide with a fair degree of security.

If, however, the river has fallen so that even a narrow open shoreline of mud and bare rock is exposed between the cover and the water, the hen immediately attempts the crossing of the main river. The passing of pleasure craft or large barges frequently drives the group back to shore. One hen that had been forced back kept her brood hidden on the bank for over an hour while a fisherman ran his long trot line out in open water. When he left, the brood immediately reappeared and started their river crossing.

The river crossing seems a tremendous undertaking for young birds scarcely 24 hours old. The channel is a half mile wide and the current runs from two to three miles per hour. When starting the trip, the young group tightly behind the mother and some have appeared to me to engage their toes in her feathers so as to be towed along at times. Watching with binoculars, I have noticed that when one or more ducklings fell behind, the hen slowed her pace until the laggards caught up.

The young are able swimmers and can even dive under water if badly frightened. In travelling short distances, as during feeding, they may spread out or trail substantially behind the female, but in the case of a long forced swim, such as this river crossing, they stay close to the mother and may even cling to her as indicated above.

My estimate of the distance from the starting point to the point of arrival diagonally across the channel is three-quarters of a mile, as the crow flies, but due to the current, the hen quarters upstream making the actual water distance substantially greater. I have timed several broods on this swim and they all take about 20 minutes, an astonishing speed for such a long trip.

SUMMARY

The erection of nesting boxes in a residential area in Burlington, Iowa, attracted a colony of breeding Wood Ducks (*Aix sponsa*) whose nests were accessible for intensive study. Observations were made on 63 nests in the years 1943 to 1950.

Laying may begin as early as March 23, but most clutches were initiated in April. A few late clutches were initiated in late May and early June, and these are believed to represent second attempts. One egg a day normally is deposited by each female.

Normal clutches averaged 11.8 eggs, the earlier nests having larger clutches than those initiated late in the breeding season. Dump nests, in which more than one hen deposited eggs, frequently had larger clutches, but these were not usually incubated. When dump nests are included with normal nests, the average clutch was 14 eggs.

Incubation commences after the last egg in a clutch is laid. The incubation period was found to vary from 27 to 33 days, hatching occurring on the 30th day in a majority of cases.

Drakes attended the hen until the fourth week of incubation and a few continued until incubation was completed.

Of the 868 eggs laid in the 63 nests, 695 hatched. However, probably fewer than 500 ducklings reached the river bank. Of 189 ducklings observed after departure from the nest, 61 (33 per cent) failed to survive the trip from the nest to water. Under wild conditions, reproductive success might be even lower.

Burlington, Iowa, June 15, 1951.

PERSISTENCE OF A RARE COLOR ABERRATION IN THE HEERMANN GULL

By CARL L. HUBBS and GEORGE A. BARTHOLOMEW, JR.

On February 8, 1948, while aboard the Schooner "E. W. Scripps," stormbound in Bahía Tortugas, Baja California, we observed in a flock of Heermann Gulls (*Larus heermanni*) two immature individuals with a patch of white on each wing. The wing pattern of white on dark gray gave these birds in flight a flashing appearance suggestive of Willets. In one bird the white patch extended entirely across each wing and therefore covered several quills, probably secondaries. In the other bird some primary coverts and only two or three quills, on each wing, were white.

A similar individual was twice observed on September 24, 1950, on the beach just north of Punta Cabras, northwestern Baja California. It had an oblong patch of clear white near the bend of each wing, parallel to and well within the front margin. The only other similarly marked Heermann Gull that either of us has seen recently in the field was watched on November 9, 1950, at Playa del Rey, California. Its completely symmetrical white wing patches resembled that shown in figure 1.

These isolated observations assume significance when it is recalled that essentially similar color variants have been observed in this species throughout a wide geographic range sporadically for nearly a century (Swarth, 1924). Most published reports date from 1918 to 1924 and none seems to have appeared during the past quarter century. The persistence of the rare aberration, however, is proved by unpublished observations included in the list on pages 222-224.

The sporadic repetition of this striking variation (Taverner, 1918) suggests that its cause lies in some such genetic mechanism as (1) recurrent mutation; (2) the occasional chance mating of the rare individuals that carry the recessive gene or genes which in homozygous combination produce the anomaly; (3) the infrequent phenotypic expression of a gene or of genes having low penetrance or low expressivity; or, possibly, (4) the rare atavistic retention of an ancestral trait.

Whatever its genetic mechanism may be, the aberrant pattern has remained very rare throughout the century of observation. The two patterned individuals seen on February 8, 1948, were the only abnormal ones among hundreds. The one observed on September 24, 1950, was unique among 194 counted on the same beach. The one watched on November 9, 1950, was the only variant in a flock of about 400. The proportion must be lower than one in several hundred, however, for only these four abnormal individuals have been seen by us among the many thousands checked in 1948, 1949 and 1950 at various localities in California, along the outer coast of Baja California, and at several points in the Gulf of California. Lewis Wayne Walker tells us that he does not recall having seen any such variants among the myriads of Heermann Gulls that he has observed and photographed during several visits, some as long as three weeks, to the breeding colonies on Isla Raza in the Gulf (Walker, 1951). On the same island van Rossem (personal communication) saw about 20 of the variants among the many thousands observed in 1925. On the label of a white-blotched wing that he collected at Isla Raza in 1930 (fig. 1), van Rossem wrote: "this type of wing present in proportion of about 1 to 1000." On the 1925 trip he saw only one such bird in the breeding colony on Isla San Jorge and none in the colony on Isla Ildefonso, both also in the Gulf of California. In 1949 and in other years Ed N. Harrison and others have studied and photographed the breeding Heermann Gulls on Isla San Jorge without noting a single

bird with white wing patches. Bancroft's (1932:341) estimate of one such aberration per thousand birds for the Raza colony in 1925, though agreeing with van Rossem's estimate, was probably excessive. A frequency of only one in ten thousand seems more reasonable.

We have, it is true, located 20 variants of this type among the 616 specimens of the species, downy young excluded, in the nine collections examined (see p. 226 for explanation of abbreviations): LACM, 8 among 108; MVZ, 5 among 98; SDSNH, 3 among 29; DC, UCLA, 2 among 16; MCZ, 1 among 75; CAS, 1 among 168; USNM, 0 among 25;



Fig. 1. Wing of Heermann Gull from Isla Raza, Gulf of California (specimen no. 23), showing white blotch on primary coverts.

UMMZ, 0 among 29; AMNH, 0 among 68. It is obvious, however, that the striking variants have been collected and preserved in numbers disproportionate to their actual frequency in nature. The clustering of records around 1910 and 1918, respectively, probably reflects the especially active collecting then of R. H. Beck and of George Willett.

Known records of white wing patches.—The abbreviations for the collections examined are explained in the acknowledgments, page 226. Specimens are listed in order of date of collection or of observation. Because of the complicated seasonal as well as age changes in plumage, the age estimates are subject to error.

1. February, 4, 1862: immature female, perhaps in second year; San Diego, California; J. G. Cooper; MVZ 4418, prepared with wings extended. This is almost certainly the bird independently reported, on the basis of information found in the correspondence of the collector, but without adequate data, by Deane (1879) and by Swarth (1924); both authors quoted Cooper as saying that

the large white patch on each wing extended across the "secondary quills," whereas the white is actually on the greater primary coverts (see table 1).

2. January 4, 1897: adult male in winter plumage; Monterey, California; Alvin Seale; MCZ 246919 (not previously recorded). James L. Peters describes the white markings on this bird as follows: On the left wing, "the outer six greater primary coverts are white, although the third one has only a little white freckling on the outer web. The median primary coverts are white—some of them with a small amount of dusky freckling. Almost all the secondaries are white—the inner ones with a small amount of dusky freckling and the outer ones with a good deal of dusky on the outer webs. There doesn't seem to be much sense to the arrangement of the dark areas." On the right wing, "the outer secondaries contain the most white, while the innermost ones are normally colored and the median primary coverts also contain a great deal more of the dark feathers."

3. October 18, 1909: immature female; Monterey Bay, California; R. H. Beck; CAS 15886 (not previously reported. (See table 1.)

4. August 10, 1910: immature female, perhaps in second year; vicinity of Point Pinos, Monterey County, California; Beck; MVZ 18241 (not previously reported). Large white area on left wing, smaller on right (table 1).

5. November 28, 1910: immature male, perhaps in second year; Monterey Bay, California; Beck; MVZ 18265 (not previously reported). (See table 1.)

6. 1911: several observed at Redondo, California (Hubbs, 1919). "Each of these had a large squarish white blotch symmetrically located near the angle of each wing, in some cases more definitely and more extensively developed on the one side than on the other."

7. January 30, 1912: adult female; Hyperion, Los Angeles County, California; George Willett; LACM 1105 (Willett, 1918). Specimen re-examined.

8. March 16, 1912: immature female, perhaps in second year; La Paz, Baja California; W. W. Brown; MVZ 106897 (not reported previously). Two primary coverts partly white on right wing, none on left (table 1).

9. January 26, 1916: adult female; Hyperion Beach, California; L. E. Wyman; LACM 14027 (reported by Willett, 1918, as having "two white feathers in primary covert of one wing, but none in other"). Specimen re-examined (table 1).

10. February 25, 1916: subadult or winter male; Pacific Beach, California; Frank Stephens; SDSNH 6770 (not previously reported). Extremely large white areas in primaries as well as on greater primary coverts (table 1).

11. August 14, 1917: subadult female; Alert Bay, Vancouver Island, British Columbia; Museum of the Geological Survey of Canada (reported by Taverner, 1918, as having four outer primary coverts of one wing and two of the other pure white).

12. January 18 to February 5, 1918: three adult females and one adult male; Hyperion, California; George Willett; LACM 2127, 2128, 2199, 2210 (reported with no. 7 by Willett, 1918, as having a white patch on each wing). Specimens re-examined; no. 2128 has a scattering of white feathers on the abdomen.

13. June 21, 1918: one observed at Pacific Grove, California (Hubbs, 1919; reported with no. 6).

14. October 21, 1918: adult female; Hyperion; L. E. Wyman; LACM 2723 (not previously reported). Wyman noted: "primary coverts white; faint touch of white across abdomen."

15. November 22, 1918: adult female; Hyperion; Willett; LACM 2604 (not previously reported). Five primary coverts largely white, two on the left wing and three on the right.

16. January 30, 1920: adult female; Camp Banning, Santa Catalina Island, California; A. J. van Rossem; DC, UCLA H269 (reported by Dickey and van Rossem, 1923, as having "the aberrant white primary cover's"). Specimen re-examined (table 1).

17. February 17, 1921: one seen at Santa Catalina Island "displayed this same covert-pattern" (Dickey and van Rossem, 1923).

18. Spring, 1925: about twenty observed in breeding colony on Isla Raza, Gulf of California (Bancroft, 1932:341, and A. J. van Rossem, personal communication).

19. Spring, 1925: one observed in breeding colony on Isla San Jorge (Georges Island), Gulf of California (van Rossem, personal communication).

20. December 27, 1925: subadult or winter female; North Island Jetty, San Diego, California; Joseph W. Sefton, Jr., SDSNH 10243 (not previously reported). Right wing with two white feathers, left with none (table 1).

21. March 27, 1926: immature male; San Felipe, Baja California (on the Gulf); Raymond Gilmore; MVZ 47843 (not previously reported). (See table 1.)
 22. September 12, 1926: subadult or winter male; off Point Loma, San Diego, California; Joseph W. Sefton, Jr.; SDSNH 11237 (not previously reported). Large white patch on each wing (table 1).
 23. April 16, 1930: single wing of adult male (fig. 1); Isla Raza, Gulf of California; A. J. van Rossem; DC, UCLA 30170 (not previously reported).
 24. February 8, 1948: two observed by authors at Bahia Tortugas, Baja California (p. 221).
 25. August 29, 1948: one observed by Robert W. Storer (personal communication); off Golden Gate, California. White patch on each wing.
 26. October 15, 1949: two observed by J. R. Pemberton (personal communication); about midway between Ensenada and Islas Todos Santos, Baja California. White patch on each wing.
 27. September 24, 1950: one observed by senior author; near Punta Cabras, Baja California (p. 221).
 28. November 9, 1950: one observed by junior author; Playa del Rey, California (p. 221).

Table 1

Feathers Involved in White Wing Blotches in Ten Specimens of Heermann Gull

The amount of white in the stated feather of the left and right sides is roughly indicated by 0 = none, 1 = very slight to slight, 2 = moderately small, 3 = medium, 4 = moderately to very large, 5 = complete. The coverts and the primaries are counted from the innermost. Feathers omitted were dark in all specimens examined. The enumeration of the feathers may not be completely precise, because the examination, to avoid damage to the specimens, was rather crude.

Specimen Numbers (in list on pp. 222-224)

	1	3	4	5	8	10	16	20	21	22	Average per wing
Greater primary coverts											
3	0-0	0-0	0-0	0-0	0-0	0-2-4	0-0	0-0	0-0	0-0	0.0-0.4
4	5-5	3-0	5-0	4-0	0-0	4-5	4-2	0-0	0-2	0-0	2.5-1.4
5	4-5	5-1	4-5	0-1	0-0	5-4	5-5	0-0	3-3	0-4	2.6-2.8
6	4-4	4-5	5-5	0-4	0-3	4-5	4-2	0-0	4-4	4-5	2.9-3.7
7	3-4	4-4	5-0	0-0	0-0	5-4	4-4	0-3	0-0	4-4	2.5-2.3
8	2-5	5-1	5-0	0-0	0-2	4-5	2-5	0-0	3-0	2-2	2.3-2.0
9	4-4	5-1	5-4	0-0	0-0	5-4	1-2	0-4	0-0	5-4	2.5-2.3
10	0-0	2-0	0-0	0-0	0-0	4-0	0-0	0-0	0-0	5-4	1.1-0.4
Avge.	2.7-3.4	3.5-1.5	3.6-1.7	0.5-0.6	0.0-0.6	3.9-3.9	2.5-2.5	0.0-0.9	1.3-1.1	2.5-2.9	2.1-1.9
Primaries											
1	0-0	0-0	3-0	0-0	0-0	1-1	0-0	0-0	0-0	0-0	0.4-0.1
2	0-0	0-0	0-0	0-0	0-0	2-0	0-0	0-0	0-0	0-0	0.2-0.0
3	0-0	0-0	0-0	0-0	0-0	0-4	0-0	0-0	0-0	0-0	0.0-0.4
4	0-0	0-0	0-0	0-0	0-0	4-5	0-0	0-0	0-0	0-0	0.4-0.5
5	0-0	0-0	0-0	0-0	0-0	3-4	0-0	0-0	0-0	0-0	0.3-0.4
6	0-0	0-0	0-0	0-0	0-0	2-2	0-0	0-0	0-0	0-0	0.2-0.2
7	0-0	0-0	0-0	0-0	0-0	3-1	0-0	0-0	0-0	0-0	0.3-0.1
Avge.	2.7-3.4	3.5-1.5	3.6-1.7	0.5-0.6	0.0-0.6	2.1-2.4	0.0-0.0	0.0-0.0	0.0-0.0	0.0-0.0	0.3-0.2

Particularly striking and significant are the consistency of pattern and the essential symmetry of the variants. Except for three specimens which have only two white primary coverts in one wing and no white feathers on the other wing, all variants reported or examined have had a white patch near the bend of each wing. Minor asymmetries have been noted in the size and shape of the patches and in the numbers of feathers

variously whitened. Often, white feathers are separated by one or two of normal color. Some greater primary coverts other than the two innermost and the outermost one seem always to be involved, rarely also some secondaries or some primaries, or even some contour feathers on the abdomen (see descriptions and the list above and table 1). The mean number of white coverts per wing is about 4 (table 1).

Occasionally, all defectively pigmented feathers are entirely pure white, or very nearly so, in one or both wings. More commonly, some feathers are piebald, with the dark and light areas either solid, or blotched, or speckled with the opposite shade. In two-toned feathers the dark pigment is usually concentrated along the shaft and near the tip. The degree of whitening of individual feathers grades from a bare trace to completeness (table 1).

The essential consistency and the basic symmetry of the pattern suggest that such aberrations might become segregated, perhaps abruptly, to characterize a new subspecies or species. Speciation along this line would seem to be especially likely in a form such as *Larus heermanni*, which has a relatively limited total population comprising few breeding colonies that occupy only a small proportion of the many available sites. Should the nucleus of a new breeding colony happen to include one of the variants, the aberration might become established rapidly in the expanding population. The "Wright effect" or "drift" might suffice, but the process would be accelerated and be rendered much more probable if the new pattern should have even a slight selectional advantage. Such increases have been observed in the proportion of color variants in certain animals (Huxley, 1943:93-110).

The persistent rarity of the aberration in the Heermann Gull, however, argues against effective selection. As Huxley has indicated in the review just quoted, the proportional numbers of variant types often remain constant over long periods.

The extreme rarity of the variant Heermann Gulls indeed suggests a negative selection. The disadvantage, if any, however, does not seem to involve the social behavior or acceptance of the variants. Their actions and that of their flock companions seem to be approximately normal. At least, unlike some albinos, they are not notably shunned or pecked.

It is possible, however, that the white-marked birds may possess some innate peculiarities of behavior, for plumage mutations appear to be correlated commonly and perhaps characteristically with some distinctive behaviorism, such as tameness (Lee and Keeler, 1951). The mutants seen near Punta Cabras and near Playa del Rey gave evidence of such individuality, for each was among the very last of its flock to be flushed each time it was approached. Such peculiarities in activity might accelerate the organization of plumage mutants into a new race or species.

It may be of significance, from a genetic viewpoint, that among the 21 variants that have been sexed, only 7 were designated as males.

The abnormal white feathering seems to bear almost no relation to the development of the normal white markings of the adult, except in that some birds with unusually large white areas, for example variant number 10 (p. 223) and table 1), appear to have the normal white tip of the secondaries unusually wide and conspicuous. The abnormal white coverts appear in otherwise almost wholly dark juveniles.

Whether all the white-marked variants stem from the breeding grounds on the Gulf islands is not known, for nothing appears to have been determined regarding the presence or absence of the aberration in the population of Isla San Roque, the only breeding station reported on the west side of Baja California (Grinnell, 1928:60). Nor is it known, indeed, whether the breeding populations on the two sides of Baja California

intermingle. Even though very rare, such variants may characterize certain populations or even subspecies. Thus, partly black individuals occasionally appear in various parts of the range of the eastern mosquitofish, *Gambusia affinis holbrooki*, but seem to be lacking in the western subspecies, *G. a. affinis*.

No similar color aberration seems to have been reported for any other species of the Laridae, though some color anomalies have been described in the family, as by Robinson (1926) and by Cruickshank (1940). Even in the very similar and apparently closely related species of the Galápagos Islands, namely *Larus fuliginosus*, of which a large series was examined in the California Academy of Sciences, no specimens have been observed with white wing patches. In their general review of the literature on plumage mutants in birds, Lee and Keeler (1951:82) cite only two instances in the family, apparently disregarding the wing-pattern anomaly treated in this paper. Some similar types of variation, but not of identical pattern, have been observed in other birds, for instance in geese (Hanson, 1949).

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SUMMARY

For nearly a century a striking color aberration of the Heermann Gull (*Larus heermanni*) involving a white patch near the bend of each wing, has been reappearing in great rareness, perhaps one in 10,000. In consistency and in symmetry the marking suggests a character to be expected in a related species. Such an aberration might indeed give rise to a new form. The sporadic repetition suggests a recurrent mutation, a homozygous combination, an infrequent phenotypic expression, or an atavistic trait. There is no evidence of strong positive or negative selection. The plumage variants may also have some behavioristic trait, perhaps tameness. The abnormal white feathering bears little relation to the normal development of white areas. Comparable variations are unknown in other gulls.

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A LIST OF THE BIRDS OF NEVADA

By JEAN M. LINDSAY

In the Pacific Coast Avifauna fifteen years ago (Linsdale, 1936a) appeared an account of The Birds of Nevada. That work was intended to be a summary of all that was known of the birds in that state—the nature of their occurrence as to locality and time, and brief mention of their natural history. Subsequent reports pertaining to Nevada dealt with a detailed faunal survey of the vertebrates in a single mountain range (Toyabe) where special study was made of environmental responses of each species and with the natural history and adaptations of particular species (Linsdale, 1936b, 1937, 1938).

A new list is being published now because the recent increase in ornithological field work in Nevada has resulted in much new information about the occurrence of birds in the state. Also, the numerous systematic studies of birds published in late years have brought a better understanding of the status of numerous species in the region. There is need to bring both the scientific and vernacular names into better agreement with those used currently in the ornithological journals. In this list the vernacular names are supplied for species, but not for races. I have made use of both published and manuscript records in preparing this supplement, but I have not examined the specimens collected in Nevada since 1936.

In addition to the numerous publications dealing with Nevada birds since 1936, many manuscript records have been made available to me for use in this list. I am grateful to the following observers who have sent me their records directly or by way of some other person: J. Brown, M. B. Cater, H. L. Cogswell, F. C. Evenden, Jr., H. I. Fisher, R. K. Grater, N. K. Johnson, V. K. Johnson, D. Kuser, D. B. Marshall, A. H. Miller, R. G. Miller, F. Richardson, F. S. Ruth, M. Sullivan, G. Treichel, and V. Woodbury.

My expectation is that this list will be useful to any observer in the field in Nevada if it is accompanied by the compilation of 1936. Examination of the two papers together will show the prominent gaps in the evidence needed to define the occurrence of the species. The most profitable studies made in this area are likely to be based on the preservation of specimens obtained on the breeding grounds. There is need, however, for more records of wintering and migrating birds where the identity is verified by specimens. Long periods of year-round study of bird occurrence would be profitable in any locality. The varying sets of bird species from mountain range to mountain range over the state deserve special study. For numerous birds entered in this list the occurrence has not yet been validated by preserved specimens.

The list contains 309 full species; with 87 races additional, there are 396 kinds of birds reported from Nevada.

Gavia immer. Common Loon. Regular but not numerous transient; found on larger lakes in spring and fall. Johnson (1935:286) on April 19, 1935, saw 6 loons on Lake Tahoe. Alcorn (1946:129) reported specimens taken on April 12, 1942, and October 31 and November 3, 1940, at Fallon. Grater (MS) has records for Virgin Basin, April 9, 1938, and Callville Wash, December 6, 1938, both on Lake Mead.

Gavia arctica pacifica. Arctic Loon. Two records: Marshall (1951:157) on April 9, 1950, picked up the remains of an immature bird on the shore of Soda Lake. Wilson and Norr (1951:32) report that B. H. Cater on October 21, 1950, found a freshly killed bird near the Ruby Lake Refuge, Elko County.

Columbus grisegena holböllii. Red-necked Grebe. A prehistoric record from Lovelock Cave, Humboldt Mountains, was determined by Howard (1939:32) on basis of two bones.

Colymbus auritus. Horned Grebe. Reported from August to November at Pyramid and Franklin lakes. On April 19, 1942, Richardson (MS) saw 2 at Pyramid Lake.

Colymbus caspicus californicus. Eared Grebe. Resident; most numerous in migration, least common in winter. In July, 1950, Cogswell (MS) found at least 25 nests with eggs on Little Washoe Lake.

Aechmophorus occidentalis. Western Grebe. Present at any time of year on lakes.

Podilymbus podiceps podiceps. Pied-billed Grebe. Resident and transient; recorded from widespread locations in winter.

Pelecanus erythrorhynchos. White Pelican. Nests at Pyramid Lake; also present at other lakes and on rivers in summer and over most of the state in migrations. Wilson and Norr (1950:212) reported pelicans in 1949 at Pyramid Lake on December 13 and at Stillwater Refuge, Churchill County, on December 15.

Pelecanus occidentalis californicus. Brown Pelican. Accidental: observed once on May 20, 1934, in Churchill County and reported by Baldwin (1947:85) as present in late September, 1946, with white pelicans on the shore of Lake Mead near the Boulder boat dock. Smiley (1937:117) found pelicans on this lake on April 15 and May 31, 1936.

Phalacrocorax auritus albociliatus. Double-crested Cormorant. Nests at Pyramid Lake; recorded infrequently elsewhere in migration. Observed by Alcorn (1946:130) near Fallon in all months but February and March. Grater (MS) made records from April to December on Lake Mead.

Fregata magnificens rothschildi. Frigate-bird. Accidental: one reported seen on September 2, 1946, in vicinity of Eldorado Canyon, 35 miles below Boulder Dam, by Baldwin (1947:85).

Ardea herodias. Great Blue Heron. The race *A. h. treganzai* is found regularly about the larger streams and lakes and, infrequently, elsewhere in the state.

Alcorn (1941:118) reported a specimen of *A. h. hyperonca* obtained on November 13, 1939, 4 miles west of Fallon.

Casmerodias albus egretta. Common Egret. A summer visitant over most of the state. Ned Johnson (MS) has seen several from April to August on the Truckee Meadows. Resident in Lahontan Valley. Alcorn (1946:130) reports a nesting colony 3 miles north of Stillwater.

Leucophoyx thula brewsteri. Snowy Egret. Summer resident in small numbers in valleys throughout the state. B. H. Cater saw 3 at Ruby Lake on September 20, 1948 (Van den Akker, 1949:24). Reported by Alcorn (1946:130) as abundant from April through September in Lahontan Valley with stragglers as late as December and a nesting colony 3 miles north of Stillwater.

Hydranassa tricolor ruficollis. Tricolored Heron. One record: a bird was seen by Grater (1939:121) on November 21, 1938, along the shore of Lake Mead, near the site of Saint Thomas.

Florida caerulea. Little Blue Heron. An immature bird reported by Baldwin (1944:35) as seen by him and Victor H. Cahalane on Lake Mead, near Overton, November 13, 1943.

Butorides virescens anthonyi. Green Heron. Summer resident in the Colorado River Valley and recorded in late summer in western part of the state. Ned Johnson saw one 5 miles west of Reno on May 1, 1948. Alcorn (1940:169) reported a specimen obtained in September, 1934, 4 miles west of Fallon and 2 on August 24, 1939, from the Carson River, Douglas County. Bond (1940:220) in May, 1939, saw one at Hiko Lake and one in Rose Valley, Lincoln County. Cottam (1947:244) saw 2 on June 30, 1947, at the mouth of Muddy Creek, south of Overton.

Nycticorax nycticorax hoactli. Black-crowned Night Heron. Resident; present in small numbers about the streams, lakes, and marshy areas. Remains through the winter in some localities.

Botaurus lentiginosus peetti. American Bittern. Resident wherever marshes occur.

Ixobrychus exilis hesperis. Least Bittern. Infrequent in summer; reported from Washoe, Elko, Churchill, Esmeralda, and Clark counties. A specimen reported by Alcorn (1946:130) was obtained in September, 1935, at 4 miles west of Fallon. Grater (MS) saw one on August 18, 1938, in Hemenway Wash, and one on September 26, 1938, near Saint Thomas.

Mycteria americana. Wood Ibis. Summer visitant, mainly to southern part of the state. A. B. Howell (MS) saw one in July, 1930, along the Humboldt River, west of Beowawe. Grater (MS) found it as late as October near Saint Thomas. Gabrelson (1949:179) saw several on September 30, 1939, near Overton.

Plegadis mexicana. White-faced Glossy Ibis. Summer resident and transient; frequent about marshy areas, including those formed naturally as well as those resulting from irrigation.

Cygnus columbianus. Whistling Swan. Winter visitant. Alcorn (1946:130) reported these birds

as present from October to March in the Lahontan Valley. Cottam (1936:122) reported 3 at Hiko in December, 1923, and January, 1924. Sullivan (MS) reports a mounted specimen that was found dead in January, 1948, in Las Vegas Wash.

Cygnus buccinator. Trumpeter Swan. Henshaw (1877:1312) reported this swan on Washoe Lake and the sink of the Carson River in the fall. A letter from Baine H. Cater on June 20, 1949, contains information that Trumpeter Swans originally captured in October, 1947, at Red Rock Lakes, Montana, had been held captive at the Ruby Lake Refuge with intention of releasing them in Nevada.

Branta canadensis. Canada Goose. *B. c. moffitti* is resident; most numerous in migrations and least common in winter. Mainly on larger lakes in north and west.

A specimen of *B. c. occidentalis* in Museum of Vertebrate Zoology taken on January 18, 1942, from a flock of about 30 at the south end of Soda Lake was reported by Alcorn (1943:40).

The race *B. c. leucopareia* is winter visitant in western part of state. Alcorn (1946:131) reported specimens taken in November, December, and January in the Lahontan Valley.

As many as 50 geese of the race *B. c. minima* were seen in November, 1943, on Ruby Lake, Elko County, by H. H. Dill (1946:96). Alcorn (1946:131) reported one shot on December 4, 1943, in the Lahontan Valley. At the Sheldon Refuge in 1950 J. E. Schwartz saw 20 on January 19, 300 on February 27, and the last on March 10 (Wilson and Norr, 1950:213).

Branta bernicla nigricans. Black Brant. Two early records are for Pyramid and Washoe lakes. In the autumn of 1947 V. K. Johnson and V. Woodbury identified one on Lake Virginia, Reno. Birds in March and August in Hemenway Wash were reported by Grater (1939:221). Baldwin (1944:207) saw one on January 14, 1944, on Lake Mead; on March 30 and 31 he saw at least 40 on the lake.

Anser albifrons. White-fronted Goose. Transient. Richardson (MS) saw about ten 3 miles east of Fernley in May, 1946. Reported as present from November 11 to 15, 1943, on Ruby Lake in numbers from 14 to 214, by H. H. Dill (1946:96) who gives this bird as a fairly common fall migrant in that area in the early thirties. A specimen was obtained on April 3, 1938, near Soda Lake (Alcorn, 1940:169). Alcorn (1946:131) reports this bird as transient but not numerous in the Lahontan Valley. Records were for March to May and September to December. Cottam (1936:122) saw 6 on January 1, 1925, 8 miles south of Alamo. One was seen on May 6, 1938, on Lake Mead, near the site of Saint Thomas by Grater (1939:30).

Chen hyperborea hyperborea. Snow Goose. Winter visitant, formerly at least, in large flocks. Alcorn (1946:131) reported this goose as present from September to February and abundant in October and November in the Lahontan Valley.

Dendrocygna bicolor helva. Fulvous Tree-duck. Recorded as present in early 1877 on Washoe Lake. Alcorn (1946:131) reported a bird shot on November 14, 1940, at 14 miles west of Fallon. Mrs. Amelia S. Allen (1945:49) reported that she saw one in a barnyard pool near Minden. Friedmann (1947:193) reports this duck as breeding north to central Nevada (Washoe Lake and Carson); not "near Fallon" as cited by Gullion (1951:158).

Anas platyrhynchos platyrhynchos. Mallard. Resident; most numerous in migrations, less frequent in winter.

Anas strepera. Gadwall. Resident: a few individuals present on lakes and ponds through the summer, more numerous in migrations, but not common in winter. Gabrielson (1949:180) at the end of May, 1948, saw about 8 pairs in small ponds in Virgin Valley, Humboldt County.

Anas acuta tzitzikos. Pintail. Resident; common in summer and in migration seasons. Few present in winter and these mainly in the lower valleys and in the southern part of the state. Nests in wet meadows and about marshy ponds and lakes.

Anas carolinensis. Green-winged Teal. Resident; common during migration seasons. Summer records are all in northern part of the state. Not numerous in summer. Likely to be seen about any of the springs, ponds, shallow lakes, or streams.

Anas discors. Blue-winged Teal. Summer resident; rather common about the wet meadows during the nesting season. In migrations likely to occur anywhere in the state.

Anas cyanoptera cyanoptera. Cinnamon Teal. Summer resident and transient; most common of the teals. Present wherever water occurs, even in such small amounts as springs and small temporary pools. This teal was present as early as March 10, in 1949, at Fallon (Van den Akker, 1949:179).

Mareca penelope. European Widgeon. One record: a male collected in November, 1948, in Reno, by Verne Woodbury (Richardson, MS).

Mareca americana. Baldpate. Uncommon summer resident in northern part of state, transient over whole state, and winters in southern part. Wilson and Norr (1950:213) report Baldpates in 1950 as early as January 10 at Reno. In the Indian Lakes area in Lahontan Valley on July 12, 1950, Marshall (1951:157) obtained a downy young from a brood of 8.

Spatula clypeata. Shoveller. Resident and transient; common. Many spend the winter in the Lahontan Valley (Alcorn, 1946:131).

Aix sponsa. Wood Duck. Formerly uncommon in western part of the state. In November, 1943, V. Woodbury collected a male at the north edge of Reno. Alcorn (1946:131) reports several recent records in the Lahontan Valley for the period September to January.

Aythya americana. Redhead. Resident and transient; common about medium-sized lakes and ponds, especially in western part of the state. On October 27, 1948, Cater reported 5000 at Ruby Lake (Van den Akker, 1949:25).

Aythya collaris. Ring-necked Duck. Transient and winter visitant in western part of state; recorded in Lahontan Valley by Alcorn (1946:131) from October to March. On June 27, 1950, G. Treichel saw 4 on Little Washoe Lake.

Aythya valisineria. Canvasback. Winter visitant and transient; common on the lakes and ponds. Alcorn (1946:131) reports this duck from October to April and on July 22, 1942, in the Lahontan Valley.

Aythya marila nearctica. Greater Scaup Duck. A specimen taken on November 20, 1938, near Soda Lake by Vernon L. Mills was reported by Alcorn (1940:169).

Aythya affinis. Lesser Scaup Duck. Transient and winter visitant throughout the state; definite records in Lahontan Valley by Alcorn (1946:131) in every month except August and September.

Bucephala clangula americana. Common Golden-eye. Regular winter visitant; found in small numbers in the lakes and ditches from November to January. At Ruby Lake in the fall of 1948 there were 1000 (Van den Akker, 1949:25).

Bucephala albeola. Buffle-head. Winter visitant; found on the larger lakes from October to July. Marshall (1951:157) found two on July 12, 1950, on one of the Indian Lakes.

Histrionicus histrionicus pacificus. Harlequin Duck. Reported once, about 1900, on Washoe Lake.

Melanitta deglandi. White-winged Scoter. Specimens of this duck shot in the vicinity of Fallon in November, 1940, were reported by Alcorn (1941:119).

Melanitta perspicillata. Surf Scoter. Occurrence in October and November, 1940, at Soda Lake was reported by Alcorn (1941:119). Three specimens were collected.

Oxyura jamaicensis rubida. Ruddy Duck. Present in the state at all seasons, but probably not many remain in the northern part during the winter. Found by Gabrielson (1949:180) at the end of May, 1948, in Virgin Valley.

Lophodytes cucullatus. Hooded Merganser. Present in fall and winter in north and west parts of state; formerly in summer along Truckee and Carson rivers. One specimen from Ruby Lake. In November, 1948, V. Woodbury collected a male at the southwest edge of Reno. Alcorn (1940:169) reported a male taken in December, 1937, from 4 miles southwest of Wadsworth. He also reported (1946:132) the species as present from November to February in Lahontan Valley.

Mergus merganser americanus. Common Merganser. Resident; nests at Pyramid Lake and on other lakes and rivers. Cogswell (MS) reports a brood of seven half-grown young near Zephyr Cove, Lake Tahoe, on July 9, 1950. Grater (MS) found it to be resident on Lake Mead.

Mergus serrator serrator. Red-breasted Merganser. Winter visitant and transient; recorded southward as late as May.

Cathartes aura teter. Turkey Vulture. Summer resident; common over whole state from March to October. Present in Clark County from April to October (Grater, MS).

Gymnogyps californianus. California Condor. A complete ulna "several centuries old" came from Gypsum Cave, Clark County.

Accipiter gentilis atricapillus. Goshawk. Resident on Snake Mountains, White Pine County. Specimens taken in the fall in Sheep and Charleston mountains. Alcorn (1946:132) reported specimens taken in February and March and individuals observed in September and November in Lahontan Valley. Richardson (MS) reports a specimen from Silver City, Nye County, on October 2, 1948, and records that indicate residence in the mountains between Reno and Lake Tahoe. Bond (1940:100) reported a nest found on May 21, 1939, about 20 miles north of Ursine, in a tributary of Meadow Valley Wash, Lincoln County.

Accipiter striatus velox. Sharp-shinned Hawk. Occurs throughout the state; common in mountains, less numerous in summer than during migrations.

Accipiter cooperii. Cooper Hawk. Resident; numerous records in summer, mainly in mountains.

Buteo jamaicensis calurus. Red-tailed Hawk. Resident; common throughout the state. An adult and three young were observed on July 26, 1938, in Hemenway Wash (Grater, MS).

Buteo swainsoni. Swainson Hawk. Summer resident; common from April to August through the larger valleys of the state. At the Sheldon Refuge, Humboldt County, this is a fairly common summer and autumn resident (Wilson and Norr, 1950:27). Recorded on April 13, 1938, at Saint Thomas (Grater, 1939:221).

Buteo lagopus s. johannis. Rough-legged Hawk. Winter visitant; reported from northern part of the state from October to March. Collected twice. Gabrielson (1949:181) on October 10, 1932, saw two at Pine Creek Ranch, Nye County.

Buteo regalis. Ferruginous Hawk. Winter visitant; sometimes present in summer. Wilson and Norr (1950:27) report this hawk as fairly common summer and autumn resident at the Sheldon Refuge. Gabrielson (1949:181) reported two on August 18, 1939, in the Ruby Mountains.

Parabuteo unicinctus harrisi. Harris Hawk. One sight record: on March 30, 1949, W. Pulich saw one at Overton (Monson, 1949:180).

Aquila chrysaetos canadensis. Golden Eagle. Resident; occurs throughout the state, especially common about the higher mountain ranges.

Haliaeetus leucocephalus leucocephalus. Bald Eagle. Formerly nested at Pyramid Lake; also reported in March, 1891, in Ash Meadows. In December, 1949, Janice Brown shot one 3 miles southwest of Reno. Alcorn (1946:132) reported the species as present in Lahontan Valley in small numbers from November to February. Observed on January 14, 1944, by Baldwin (1944:206) at Lake Mead.

Circus cyaneus hudsonius. Marsh Hawk. Resident: abundant locally in summer, fewer records in winter. Closely restricted to wet meadows and marshy ground.

Pandion haliaetus carolinensis. Osprey. Infrequent in summer; observed at widely separated localities from January to October. On June 27, 1950, Cogswell (MS) saw one at Little Washoe Lake. On January 1, 1950, W. Pulich saw one at Boulder Beach, Lake Mead (Monson, 1950:215). On April 27, 1950, R. Grater saw an osprey carrying food to a nest in the cliffs below Eldorado Canyon (Monson, 1950:255).

Falco mexicanus. Prairie Falcon. Resident; fairly common and widely distributed; records mostly in summer. Nests on cliffs, but forages over widely diversified areas.

Falco peregrinus anatum. Peregrine Falcon. Reported in May, 1868, at Pyramid Lake and Truckee River and in October, 1931, near Saint Thomas. Wolfe (1937:225) reported a set of eggs taken on April 3, 1910, at Walker Lake, by F. H. Lord.

Falco columbarius. Pigeon Hawk. A specimen of *F. c. suckleyi* reported by Alcorn (1943:40) was taken on January 19, 1941, near Fallon by Vernon L. Mills.

The race *F. c. bendirei* is winter visitant and transient; recorded mostly along western border of the state. Alcorn (1946:132) reported specimens taken in November and April in Lahontan Valley. Records for April, September, and October in Clark County (Grater, MS).

Falco sparverius sparverius. Sparrow Hawk. Resident; most numerous and most widespread of the hawks in summer, occurring from valleys to highest parts of mountains. In winter, probably, limited to the lower valleys.

Dendragapus obscurus. Dusky Grouse. The race *D. o. obscurus* is resident on several mountain ranges in northeastern part of the state. Carter saw 15 on February 28, 1949, at 8500 feet in the Ruby Mountains (Van den Akker, 1949:179). Reported by Bond (1940:220) as present in 1939 on Wilson Peak and 4 miles west of Geyser Ranch, Lincoln County.

The race *D. o. pallidus* is resident in the Toyabe, Toquima, and Monitor mountains.

Dendragapus fuliginosus. Sooty Grouse. *D. f. sierrae* is resident in Sierra Nevada on western border of the state.

Grinnell and Miller (1944:116) include birds from the White Mountains of Esmeralda County in the race *D. f. howardi* although no specimens are yet available.

Pediocetes phasianellus columbianus. Sharp-tailed Grouse. In early days this bird was common in Elko County. LaRivers (1941:66) reports that he has seen the bird once recently in Nevada, but does not give particulars. In a letter under date of August 23, 1949, he wrote that he saw a flock of

6 on July 9, 1939. The birds were in a high aspen grove in the Bull Run Mountains about 2 miles west of the Homer André ranch some 9 miles south-southwest of Mountain City.

Centrocercus urophasianus. Sage Hen. Resident in northern part of the state; formerly more common than now, but still present in considerable numbers. Records all north of 37° N. Observed in May, 1939, by Bond (1940:220) on Table Mountain, 12 to 15 miles west of Pony Spring, Lincoln County.

Lophortyx californica californica. California Quail. Resident; now present at several localities in western Nevada, but whether native or introduced is problematical in each locality.

Lophortyx gambelii gambelii. Gambel Quail. Resident; common in southern part of the state, north to Quinn Canyon Mountains.

Oreortyx picta. Mountain Quail. *O. p. picta* is a sparse resident in the mountains of western part of the state; possibly not native at every place it now occurs.

Specimens from Esmeralda and southern Nye counties have been assigned to *O. p. eremophila* (van Rossem, 1937:22; Miller, 1946:58).

Alectoris graeca. Chukar Partridge. Reported by Alcorn (1946:132) as resident, not abundant, in cultivated areas near Fallon.

Phasianus colchicus. Ring-necked Pheasant. Common resident in some cultivated valleys. Reported by Alcorn (1946:132) as established in Lahontan Valley. Observed in 1939 at several localities in Lincoln County by Bond (1940:220).

Grus canadensis. Sandhill Crane. *G. c. canadensis* is transient; reported (1891) at Ash Meadows, Nye County.

The race *G. c. tabida* is transient and summer resident at a few favorable localities; nesting records in northeastern part of the state. In 1949 at the Sheldon Refuge there were 46 on November 30 (Wilson and Norr, 1950:28). Alcorn (1946:132) reports this species as frequently seen in March and April in Lahontan Valley. Cottam (1936:122) saw 15 in November, 1924, 10 miles south of Alamo.

Rallus limicola limicola. Virginia Rail. Summer resident; restricted to wet meadows and marshes. Recorded from March to December. In 1949 E. C. D. Marriage found this bird nesting along the Carson River (Wilson and Norr, 1950:27).

Porzana carolina. Sora Rail. Summer resident; common on small marshes and wet meadows; present in winter in southern end of the state. Nesting records are in northern and eastern parts. In 1949 E. C. D. Marriage found this rail nesting along the Carson River (Wilson and Norr, 1950:27).

Coturnicops noveboracensis noveboracensis. Yellow Rail. One record for May 19, 1932, in Smoky Valley, Nye County.

Gallinula chloropus cachinnans. Common Gallinule. A specimen obtained on July 15, 1928, by Vernon L. Mills near Soda Lake was reported by Alcorn (1940:170). Another taken on October 8, 1940, and sight records for August 29 and 30, 1942, were from Lahontan Valley (Alcorn, 1946:132). On November 29, 1949, one was trapped near Hot Springs (Wilson and Norr, 1950:28). A sight record is for winter in southern Clark County.

Fulica americana americana. American Coot. Resident and transient; present on nearly every pool of water, whether small or large, but most numerous where there is aquatic vegetation.

Charadrius alexandrinus nivosus. Snowy Plover. Transient. Richardson (MS) saw one on April 19, 1942, at the mouth of the Truckee River, Pyramid Lake. One picked up dead at Soda Lake on July 26, 1941, was preserved as a specimen by Alcorn (1942:81). He reported others in July and August (1946:132). Marshall (1951:157) reports large numbers in recent summers in the Carson Sink area. Bond (1940:221) on May 16, 1939, found one dead in the road 7 miles south of Maynard Lake, Lincoln County. One was seen on June 20, 1938, and one collected on June 10, 1939, near Saint Thomas (Grater, 1939:221).

Charadrius hiaticula semipalmatus. Semipalmated Plover. A recent record is for Truckee Meadows on May 5, 1940, by Christensen and Trelease (1941:156). On April 27, 1948, Ned Johnson (MS) saw two about a mile east of Reno. In Lahontan Valley Alcorn (1946:132) reported specimens on May 6, and Marshall (1951:157) has records between August 22 and September 13. At Lake Mead on May 7, 1938, reported by Grater (1939:221).

Charadrius vociferus vociferus. Killdeer. Resident; numerous in summer, but not many remain in northern part of state through the winter. Most widespread kind of shorebird in the state, occurring in all the valleys and in meadows in the mountains up to about 7000 feet.

Eupoda montana. Mountain Plover. Alcorn (1941:119) reported 3 specimens taken in early November, 1940, from Carson Lake pasture, 12 miles south-southeast of Fallon. At least 50 birds were present in the flock.

Squatarola squatarola. Black-bellied Plover. Transient. On July 26, 1950, Cogswell (MS) saw one at Little Washoe Lake. Alcorn (1941:119) reported a specimen taken on September 25, 1940, and others observed two days later at Soda Lake. He recorded (1946:132) another specimen obtained in October, 1943, in the same area, and Marshall (1951:157) recorded flocks there on April 10, April 18, and May 16. Grater (1939:121) on May 6, 1938, saw 10 along the shore of Lake Mead, near the site of Saint Thomas.

Arenaria interpres morinella. Ruddy Turnstone. One dead from botulism at Soda Lake was picked up on July 26, 1941, and preserved as a specimen by Alcorn (1942:81).

Capella gallinago delicata. Common Snipe. Present at all seasons; most numerous in fall and least numerous in winter. Present in summer south at least to 39° in Smoky Valley.

Numenius americanus. Long-billed Curlew. Present in summer in small numbers, mostly north of 39° N. Alcorn (1946:133) found this bird from April to July and on December 10, 1941, in Lahontan Valley. On May 7, 1938, Grater (1939:221) saw 11 at Saint Thomas.

Actitis macularia. Spotted Sandpiper. Transient and summer resident; common throughout the state from April to September.

Tringa solitaria cinnamomea. Solitary Sandpiper. Transient and present irregularly in summer from April to September.

Catoptrophorus semipalmatus inornatus. Willet. Present regularly as a transient and possibly as a breeder; many records in the Humboldt Valley. At Little Washoe Lake on July 26, 1950, Cogswell (MS) saw one in breeding plumage. Alcorn (1946:133) reported presence in Lahontan Valley from April to September.

Totanus melanoleucus. Greater Yellow-legs. Transient; winter visitant to southern end of state. Alcorn (1946:133) found the species in all months but February and May in Lahontan Valley.

Totanus flavipes. Lesser Yellow-legs. Transient: records from Ruby Lake in 1927. Alcorn (1946:133) recorded specimens taken in late April in Lahontan Valley. Marshall (1951:158) has a specimen taken on July 29, 1949, at Indian Lakes, Churchill County. Observed at Lake Mead, near Overton, on November 13, 1943 (Baldwin, 1944:35).

Calidrus canutus. Red Knot. One record: Marshall (1951:158) collected one of two birds at the northeast edge of the Nutgrass Area, Carson Sink, on May 16, 1950.

Erolia bairdii. Baird Sandpiper. Transient; recorded in May and August.

Erolia minutilla. Least Sandpiper. Transient; collected in May, July, and September. Marshall (1951:158) on July 13, 1949, collected a female in the Stillwater marshes. Reported by Grater (1939:221) in Clark County in April and May and August to December.

Erolia alpina pacifica. Red-backed Sandpiper. Transient; four records, 3 of them in May. A specimen from Smoke Creek, Washoe County and sight record at Pyramid Lake. R. G. Miller shot one in 1947 on Washoe Lake (Richardson, MS). Alcorn (1946:133) took a specimen on May 2, 1941, at Soda Lake.

Limnodromus scolopaceus. Long-billed Dowitcher. Transient; observed twice in May in Churchill and Douglas counties. Alcorn (1946:133) found dowitchers in every month except March and June with greatest numbers from September to December in Lahontan Valley. He took a specimen on October 14, 1940.

Micropalama himantopus. Stilt Sandpiper. Transient; recorded once by Slipp (1942:62) as observed on July 30, 1939, between Hazen and Mahala.

Ereunetes maura. Western Sandpiper. Transient; recorded in May, July, August, and November.

Limosa fedoa. Marbled Godwit. Transient; a specimen from near Midas, Elko County, was taken on July 27, 1935. On May 8, 1948, H. I. Fisher, N. Johnson, and V. K. Johnson saw one 2 miles southeast of Reno (Richardson, MS). Records for Lahontan Valley are from April and July to December (Alcorn, 1946:133). Reported by Grater (1939:221) as present, but rare, in June and October, 1938, at Saint Thomas.

Croctethia alba. Sanderling. Transient. One was collected on May 10, 1941, at Soda Lake by Alcorn (1941:294). He (1946:133) took additional specimens on July 26 and September 22, 1941, and May 18, 1942, and observed the species on October 2, 1941.

Recurvirostra americana. Avocet. Summer resident; more abundant in migration; recorded from March to December. On July 26, 1950, Cogswell (MS) saw two at Little Washoe Lake. On December 1, 1948, one was on the Nevada side of the Colorado River, several miles below Davis Dam (Monson, 1949:180).

Himantopus mexicanus. Black-necked Stilt. Summer resident; limited to borders of alkali pools and present at least from March to September.

Steganopus tricolor. Wilson Phalarope. Summer resident and transient; common in wet hay meadows. Recorded from mid-April to late September.

Lobipes lobatus. Northern Phalarope. Transient; reported from May to October. Grater (1939: 221) on October 20, 1938, saw 6 at Saint Thomas and several in May, 1939.

Larus occidentalis. Western Gull. A bone found in the prehistoric Lovelock Cave, Humboldt Mountains, agreed in size with this species (Howard, 1939:32).

Larus argentatus smithsonianus. Herring Gull. A specimen was collected on November 13, 1939, by Earl J. Alcorn at the north end of Walker Lake (Alcorn, 1940:170). Another was taken on January 13, 1942, by Alcorn (1946:133) in Lahontan Valley.

Larus californicus. California Gull. Nests at Pyramid Lake; occurs in small numbers in other parts of the state. Reported by Alcorn (1946:133) as nesting at Lahontan Reservoir. Marshall (1951: 158) reported nesting at Stillwater Point Reservoir in 1950. Grater (MS) reports this gull as common from March to August at Saint Thomas.

Larus delawarensis. Ring-billed Gull. Transient and winter visitant; recorded in every month. Grater (MS) saw this gull in May and November at Saint Thomas.

Larus pipixcan. Franklin Gull. A bone found in the prehistoric Lovelock Cave, Humboldt Mountains, agreed in size with this species (Howard, 1939:32).

Larus philadelphicus. Bonaparte Gull. Transient. Alcorn (1940:170) reported numerous observations of this species and specimens collected at Soda Lake. Dates were in May, September, October, and November, from 1931 to 1939. One was seen on May 7, 1938, on Lake Mead near the site of Saint Thomas (Grater, 1939:30).

Sterna forsteri. Forster Tern. Summer resident; common about larger rivers and lakes, from April to August.

Sterna antillarum. Least Tern. Transient; reported by Grater (1939:30) in 1938, on May 7 near site of Saint Thomas and June 6 at Hemenway Wash, both on Lake Mead.

Hydroprogne caspia. Caspian Tern. Reported in May, July, and September at Pyramid Lake, Washoe Lake, and Humboldt Marshes. Marshall (1951:158) reported a nesting colony in 1949 and 1950 on an island in Stillwater Point Reservoir. Grater (MS) saw 12 on June 12, 1939, and on subsequent days along the shore of Lake Mead in Hemenway Wash.

Chlidonias niger surinamensis. Black Tern. Present in summer from April to September.

Columba fasciata monilis. Band-tailed Pigeon. Rare transient. Alcorn (1941:119) reported one taken October 17, 1940, at 4 miles west of Fallon.

Zenaidura macroura marginella. Mourning Dove. Resident: abundant and widespread throughout the state in summer; restricted to southern portion in winter. In 1949 most of the flocks had departed from the Sheldon Refuge by September 15 (Wilson and Norr, 1950:28).

Ectopistes migratorius. Passenger Pigeon. One record of this extinct species: a bird collected in 1867 by Ridgway in the West Humboldt Mountains.

Zenaida asiatica mearnsi. White-winged Dove. Present in summer along the Colorado River in extreme southern end of the state. A sight record in May; no specimen.

Coccyzus americanus occidentalis. Yellow-billed Cuckoo. Summer resident, sparse. Observed in 1867 on the Lower Truckee River and in 1924 near Sutcliffe. Alcorn (1946:134) reports occurrence each year from May to August in Lahontan Valley. Observed on August 28, 1940, at Alamo by Cottam (1941:160). Grater (1939:221) found this bird on June 27, 1939, at Kaolin Reservoir.

Geococcyx californianus. Road-runner. Resident in portions of Lincoln, Clark, and Esmeralda counties.

Tyto alba pratincola. Barn Owl. Scarce in vicinity of Carson City; E. C. D. Marriage saw one on April 4, 1950 (Wilson and Norr, 1950:255). Richardson (MS) reports this owl as winter resident on the Truckee Meadows. Alcorn (1946:134) found it to be resident in Lahontan Valley. Resident in eastern and southern parts of the state, records from Steptoe Valley and Ash Spring, Pahranagat Valley. Grater (MS) reports it as resident at Saint Thomas.

Otus asio. Screech Owl. An adult of *O. a. macfarlanei* was obtained on June 10, 1936, by D. C. Smiley on Smoke Creek (see Linsdale, 1938:36). This is near the southern limit of the range of this bird.

The race *O. a. cinereaceus* is resident in small numbers in the southeastern part of the state; specimen from Ash Spring, Fahrangat Valley and skins from the Grapevine Mountains, Nye County, and Potosi Mountain, Clark County, in the Museum of Vertebrate Zoology.

A screech owl from Fallon was identified by Hall (1938:259) as belonging to the race *O. a. inyoensis*. Alcorn (1946:134) reported additional specimens. Richardson (MS) found it at Reno.

The race *O. a. yumanensis* is resident in the Colorado River Valley, at least in the extreme southern tip of the state; 3 specimens in winter (see Miller and Miller, 1951:172).

Otus flammeolus flammeolus. Flammulated Owl. One record: a female collected in May, 1930, at the east base of the Toyabe Mountains, northern Nye County.

Bubo virginianus. Horned Owl. The race *B. v. occidentalis* is resident over most of the state, except extreme southern and west-central portions.

Gabrielson (1949:182) reports that a specimen of *B. v. lagophonus* obtained by him on October 9, 1932, on the Pine Creek Ranch near Potts Post Office, Nye County, is identical with birds from northeastern Oregon and southeastern Washington.

The race *B. v. pacificus* is resident along the central part of the western border of the state in the vicinity of the Sierra Nevada.

In southern Nevada *B. v. pallescens* is resident on Charleston Mountains and along the Colorado River.

Nyctea scandiaca. Snowy Owl. One record: specimen obtained in December, 1929, at Indian Springs, Clark County.

Speotyto cunicularia hypugaea. Burrowing Owl. Resident; widespread but not especially common over most of the state.

Asio otus wilsonianus. Long-eared Owl. Resident; common where there are tall shrubs and trees. Probably the most numerous kind of owl in the state.

Asio flammeus flammeus. Short-eared Owl. Resident in vicinity of Ruby Lake and reported in March, 1891, at Ash Meadows. Near Carson City E. Pieretti saw one on April 29, 1950 (Wilson and Norr, 1950:255). Alcorn (1946:134) found this owl frequently from September to February and on July 5, 1941, in Lahontan Valley. Richardson (MS) reports many winter records on Truckee Meadows.

Aegolius acadicus acadicus. Saw-whet Owl. Specimens represent 5 localities: Grapevine Mountains, Nye County and Thousand Spring Valley and Kyle Canyon, Charleston Mountains; Alcorn (1946:134) reported observations and specimens from September to January in Lahontan Valley. He (1940:170) discovered another in December, 1938, near Eastgate.

Phalaenoptilus nuttallii nuttallii. Poor-will. Summer resident; common over most of the state, even to the extreme southern part.

Chordeiles minor hesperis. Common Nighthawk. Summer resident; most numerous in the high valleys and flats in the northern part of the state from May to September.

Chordeiles acutipennis texensis. Lesser Nighthawk. Summer resident in southern part of state, north to Fish Lake, Esmeralda County. W. Pulich found this species on April 18, 1949, at Boulder City (Monson, 1949:219).

Nephocetes niger borealis. Black Swift. Recorded from three localities in western Nevada: Truckee Reservation, Pyramid Lake, and Carson River Valley, 7 miles above Fort Churchill, and Grapevine Mountains.

Chaetura vauxi vauxi. Vaux Swift. Transient; recorded several times in May and June. Localities in Washoe, Eureka, Nye, and Clark counties. Richardson (MS) reports that in the vicinity of Reno N. and V. K. Johnson found this bird in 1948 in April, at Mayberry Ranch on May 1, and on Hunter Creek on September 25 (about 75 birds). Grater (MS) reported 2 on October 8 and 17 in Hemenway Wash.

Aeronautes saxatalis saxatalis. White-throated Swift. Summer resident and transient; common. Records are from May to September.

Archilochus alexandri. Black-chinned Hummingbird. Summer resident; at least three definite stations in western Nevada: Pyramid Lake, Fish Lake Valley, Esmeralda County, and opposite Fort Mojave. Wilson and Norr (1949:247) report young raised successfully in a nest in Minden in 1949.

Calypte costae. Costa Hummingbird. Present in summer in southern half of the state. Possibly stays through the winter in Colorado River Valley.

Selasphorus platycercus platycercus. Broad-tailed Hummingbird. Summer resident; mainly along streams in the mountains. Has been found in most of the ranges where field work has been done except the Sierra Nevada.

Selasphorus rufus. Rufous Hummingbird. Transient; records mainly in fall or late summer, June 29 to September 8. Reported by Cottam (1936:122) as present each spring in late April or early May at Alamo.

Stellula calliope. Calliope Hummingbird. Summer resident and transient. Found in summer about meadows in the higher mountain ranges; season from May 20 to September 7. On July 9, 1948, Cogswell (MS) saw a female on a nest at Galena Creek Camp, 6400 feet. Young were being fed in the nest on July 29.

Megaceryle alcyon caurina. Belted Kingfisher. Resident; found near the larger streams and, as a straggler, at other places in the state.

Colaptes auratus borealis. Yellow-shafted Flicker. One record: a transient obtained in late September at north end of Belted Range. Grater (MS) reported remains of one on November 29, 1938, at Boulder City (identified by F. H. Test). W. Pulich saw one on October 19, 1950, at the same place (Monson, 1951:33).

Colaptes cafer collaris. Red-shafted Flicker. Resident; most abundant and most widely distributed woodpecker in the state.

Centurus uropygialis albescens. Gila Woodpecker. In the description of this race van Rossem (1942:22) ascribed it to extreme southern Nevada in the riparian cottonwood, willow, and mesquite.

Balanosphyra formicivora bairdi. Acorn Woodpecker. One record; specimen on September 18, 1930, from Hidden Forest, Sheep Mountains.

Asyndesmus lewisi. Lewis Woodpecker. Resident, but not regular in occurrence; more common in northern part of the state. Near Steamboat Springs Cogswell (MS) saw two on July 9, 1948, and one on July 29. In 1949 this woodpecker was a common nester near Carson City (Wilson and Norr, 1949:247). Grater (MS) reported one collected on September 24, 1938, at Boulder City. W. Pulich saw one there on October 10, 1948 (Monson, 1949:29) and two on September 22, 1950 (Monson, 1951:33).

Sphyrapicus varius. Yellow-bellied Sapsucker. The race *S. v. nuchalis* is resident in small numbers in summer on the higher mountains and in winter in the lower valleys.

In the mountains near Lake Tahoe, *S. v. daggetti* is resident, at least in summer.

Sphyrapicus thyroideus. Williamson Sapsucker. *S. t. thyroideus* is resident of the pine-covered eastern slopes of the Sierra Nevada along the western margin of the state.

On higher peaks of southern part of the state *S. t. nataliae* is resident. Specimens from Silver Canyon, Sheep, and Charleston mountains.

Dendrocopos villosus. Hairy Woodpecker. *D. v. orius* is resident on the mountain ranges and along wooded streams in northwestern part of the state, south and east as far at least as Monitor Mountains.

In the northeastern corner of the state, in Elko County, *D. v. monticola* is resident.

In the southern part of the state, where restricted to the higher mountain ranges, *D. v. leucothoerectis* is resident.

Dendrocopos pubescens. Downy Woodpecker. *D. p. leucurus* is resident in northern parts of the state. Alcorn (1946:134) collected a transient on December 25, 1941, in Lahontan Valley.

In central-western part of the state, *D. p. turati* is resident in small numbers along the Truckee, Carson, and Walker rivers.

Dendrocopos scalaris cactophilus. Ladder-backed Woodpecker. Resident in extreme southern end of the state, north to vicinity of Charleston Peak.

Dendrocopos albolarvatus albolarvatus. White-headed Woodpecker. Resident in small numbers in the Sierra Nevada along the western margin of the state.

Picoides arcticus. Black-backed Woodpecker. Resident in Sierra Nevada near Lake Tahoe; also recorded in pines near Carson City.

Picoides tridactylus dorsalis. Three-toed Woodpecker. Resident in the coniferous forest on the Snake Mountains, White Pine County.

Tyrannus tyrannus. Eastern Kingbird. An infrequent summer resident in the northern part of the state; transient elsewhere. Cottam (1936:122) saw one repeatedly in early May, 1925, near Alamo.

Grater (1939:221) reported a transient individual at Saint Thomas on April 13, 1938.

Tyrannus verticalis. Western Kingbird. Summer resident; occurs mainly in the valleys and lower parts of the mountains. Recorded from March to September. An early record was of one on March 14, 1950, at Boulder Beach, Lake Mead (Monson, 1950:215).

Tyrannus vociferans vociferans. Cassin Kingbird. Grater (1939:221) reported two individuals present on June 20, 1938, at Saint Thomas.

Myiarchus cinerascens cinerascens. Ash-throated Flycatcher. Summer resident; common in southern part of the state, north to Pyramid Lake and the Ruby Mountains, but less frequent in the higher northern areas. Also present in winter along the Colorado River.

Sayornis nigricans semiastra. Black Phoebe. Present at least in winter along the Colorado River; recorded from Charleston Mountains in August and September. Cottam (1936:122) saw one repeatedly in May, 1924 and 1925, in Alamo. Alcorn (1946:134) took one on February 11, 1945, in Lahontan Valley.

Sayornis saya. Say Phoebe. *S. s. saya* is summer resident; present in most of the valleys and on lower slopes of the mountains throughout the state. Winters in the extreme southern end. Records in the north from March 25 to September 8; present in the south in December. In Lahontan Valley Alcorn (1946:134) found this bird in all months except October. Gabrielson (1949:183) saw one on October 7, 1932, at Walker Lake.

The race *S. s. quiescens* is present in winter along Colorado River in southern tip of state.

Empidonax traillii. Traill Flycatcher. *E. t. brewsteri* is summer resident; occurs mainly in the willow thickets bordering the larger streams and in lower portions of the mountains.

The race *E. t. adustus* is ascribed to Nevada as a breeding bird on the basis of a specimen from Glenbrook obtained on May 30 (Phillips, 1948:510).

Phillips (1948:513) extended the breeding range of *E. t. extimus* northward into Nevada on the basis of material from Indian Springs, Clark County.

Empidonax hammondi. Hammond Flycatcher. Transient over whole state and possibly a summer resident on high mountains along western border. Records are in May, August, and September.

Empidonax wrightii. Wright Flycatcher. Summer resident in most of the mountain ranges of the state. Transient in the valleys. Extreme dates: April 21 and September 22.

Empidonax griseus. Gray Flycatcher. Summer resident; restricted to sage brush covered areas during time of nesting, but wanders more widely in migration. Extreme dates: April 26 and September 11.

Empidonax difficilis difficilis. Western Flycatcher. Summer resident in small numbers; restricted to canyons at middle altitudes on the mountain ranges. Records range from May 30 to September 23.

Contopus virens richardsonii. Wood Pewee. Summer resident; occurs wherever there are trees, especially in the northern part of the state.

Nuttallornis borealis. Olive-sided Flycatcher. Summer resident; present in small numbers on upper parts of some of the higher mountain ranges.

Pyrocephalus rubineus flammeus. Vermilion Flycatcher. Resident in the southern end of the state; recorded north to Ash Meadows and Pahrump Ranch. Cottam (1936:122) reported a pair that remained through the winter of 1924-25 south of Alamo.

Eremophila alpestris. Horned Lark. *E. a. lamprochroa* is summer resident in the western half of the state, south to Fish Lake Valley, Esmeralda County. In other seasons present farther east and south. This and other races of Horned Lark in Nevada are treated fully by Behle (1942:205-316).

The race *E. a. utahensis* is resident in eastern Nevada from Elko and White Pine counties south to Smoky Valley in Nye County. Present in other seasons farther south and west.

In the southwestern part of the state *E. a. ammophila* is resident; recorded from 19½ miles southeast of Goldfield and Smith Ranch, Charleston Mountains.

In extreme southwestern Nevada *E. a. leucansiptila* is resident; a specimen from Arden reported by Behle (1942:277).

Tachycineta thalassina lepida. Violet-green Swallow. Summer resident; numerous throughout the mountains, and often seen in the valleys.

Iridoprocne bicolor. Tree Swallow. Transient and summer resident. Recorded as early as February 10 near Colorado River.

Riparia riparia riparia. Bank Swallow. Present in summer, but more numerous in migrations.

Nesting reported at Washoe Lake and Soda Lake. In late June, 1950; at 2 miles west of Reno more than 200 pairs were nesting in a bank (Cogswell, MS). Recorded in Clark County as early as March 10. Gabrielson (1949:183) saw 2 on August 20, 1933, at the head of Humboldt River.

Stelgidopteryx ruficollis serripennis. Rough-winged Swallow. Summer resident at a few localities; transient over most of the state. Recorded from March 10 to September 15.

Hirundo rustica erythrogaster. Barn Swallow. Summer resident and transient; present regularly in the valleys. Reported from March 19 into October.

Petrochelidon pyrrhonota. Cliff Swallow. Alcorn (1946:135) reports taking 2 specimens of *P. p. albifrons* on April 28, 1942, at Soda Lake.

The race *P. p. hypopolia* is summer resident and transient; most abundant member of its family. Records from May to September 13.

Progne subis subis. Purple Martin. Reported at Carson City and Virginia City more than 80 years ago.

Cyanocitta stelleri. Steller Jay. The race *C. s. frontalis* is resident in the higher mountains along the western border of the state, from near Reno south at least to the White Mountains.

On the Snake Mountains in eastern White Pine County *C. s. macrolopha* is resident.

The race *C. s. percontatrix* is resident in Sheep and Charleston mountains.

Aphelocoma coerulescens. Scrub Jay. The race *A. c. superciliosa* is resident in the lower mountains of western Nevada.

The race *A. c. nevadensis* is resident on mountain ranges except along the western border in the north; moves into Colorado River Valley in winter. This subspecies has been separated from *A. c. woodhouseii* (Pitelka, 1945:24) on basis of lighter color and longer bill.

Pica pica hudsonia. Black-billed Magpie. Resident; common and characteristic over the whole state except the extreme southern part, south of latitude 37°.

Corvus corax sinuatus. Raven. Resident; widespread over state but not numerous.

Corvus brachyrhynchos hesperis. Crow. Resident; not numerous. Probably more present in winter than at any other season. Transient over most of the state. Gabrielson (1949:183) saw several hundred on August 19, 1938, at the head of the Humboldt River, Elko County, and about 500 on August 20, 1933, eating buffalo berries in Paradise Valley.

Gymnorhinus cyanocephalus. Piñon Jay. Resident; common on the lower parts of mountains wherever piñons and junipers occur. On November 22, 1934, Gabrielson (1949:184) saw several thousand in a loose aggregation of flocks on Silver Peak, Esmeralda County.

Nucifraga columbiana. Clark Nutcracker. Resident; lives on upper parts of higher mountain ranges. Moves down over lower slopes after nesting in early spring.

Parus atricapillus nevadensis. Black-capped Chickadee. Resident along streams in the Snake River drainage in northeastern part of the state. The type specimen came from Salmon River at Shoshone Creek, 5000 feet, Elko County (Linsdale, 1938b:37).

Parus gambeli. Mountain Chickadee. The race *P. g. abbreviatus* is resident in the mountains of northwestern Nevada, south to Carson City. Alcorn (1946:135) reports the capture on October 31, 1940, and April 16, 1945, of specimens in Lahontan Valley and observations from October to March.

The race *P. g. inyoensis* is resident in most of the mountain ranges except in the northwestern part of the state.

Parus inornatus. Plain Titmouse. *P. i. zaleptus* is resident in western Nevada south at least to Reno.

On the piñon covered mountains in eastern Nevada *P. i. ridgwayi* is resident.

Auriparus flaviceps acaciarum. Verdin. Resident near the southern border of the state in the valleys of the Virgin and Colorado rivers.

Psaltriparus minimus. Bush-tit. The race *P. m. plumbeus* is resident; common on lower parts of mountain ranges, except on Charleston Mountains. Usually present in the thickets close to streams, but also occurs in tall-shrub vegetation on the ridges.

Bush-tits from the Charleston Mountains and the Grapevine Mountains have been assigned to the race *P. m. providentialis* (Arvey, 1941:74; Miller, 1946:58).

Sitta carolinensis. White-breasted Nuthatch. *S. c. nelsoni* is resident on the Snake and Silver Canyon mountains in eastern Nevada. W. Pulich saw a White-breasted Nuthatch on September 13, 1950, at Boulder City (Monson, 1951:34).

On several mountain ranges in western and central Nevada *S. c. tenuissima* is resident. Range extends northward along the western border to Washoe County.

Sitta canadensis. Red-breasted Nuthatch. Resident in small numbers in northern half of the state and transient or winter visitant elsewhere. Pulich saw one at Boulder City between September 2 and October 17, 1950 (Monson, 1951:34).

Sitta pygmaea. Pigmy Nuthatch. *S. p. melanotis* is resident in mountains in extreme western and eastern parts of the state: Sierra Nevada in Washoe and Douglas counties and the Snake Mountains in White Pine County.

The race *S. p. canescens* is resident on and probably restricted to Charleston and Sheep mountains.

Certhia familiaris. Brown Creeper. *C. f. montana* is present, and probably resident, on Jarbidge, Ruby, and Snake mountains in the northeastern part of the state. W. Pulich saw a Brown Creeper on October 20, 1948, at Boulder City (Monson 1949a:28).

In the Sheep and Charleston mountains *C. f. leucosticta* is resident.

In the Sierra Nevada along the western border of the state *C. f. zelotes* is resident.

Cinclus mexicanus unicolor. Dipper. Resident; present along permanent streams on several of the mountain ranges. Observed as transient in January, 1938, in Hemenway Wash (Grater, MS).

Troglodytes a. don parkmani. House Wren. Summer resident; widely distributed wherever there are trees. A few spend the winter within the state.

Troglodytes troglodytes pacificus. Winter Wren. Winter visitant; recorded in the Truckee Bottoms, near Pyramid Lake and in the Cottonwood Range. A third specimen was taken on April 5, 1939, 4 miles west of Fallon by Alcorn (1940:170).

Thryomanes bewickii. Bewick Wren. *T. b. atrestus* is resident at a few localities in the northwest part of the state in Lyon and Churchill counties. Recently assembled specimens have been reported on by Miller (1941a:250).

The race *T. b. eremophilus* is resident in southern part of the state, northward through Esmeralda County.

Campylorhynchus brunneicapillus couesi. Cactus Wren. Reported from a few localities in the southern end of the state: Muddy Mountains, Vegas Valley, Vegas Wash, and Dead Mountains.

Telmatodytes palustris. Long-billed Marsh Wren. *T. p. plesius* is resident; numerous in marshy places about springs, lakes, and streams over most of northern Nevada, south to about 38° N. Present in winter in at least a few localities.

The race *T. p. aestuarinus* is resident in southern Nevada; abundant along the Colorado River in southern Clark County. Possibly the same race is present in Pahrangat Valley.

Catherpes mexicanus conspersus. Canyon Wren. Resident; records mostly from southern part of the state. On July 23, 1948, F. Ruth (MS) saw one at Cave Rock, east shore of Lake Tahoe, Douglas County. Found by Gabrielson (1949:184) in Elko and Humboldt counties.

Salpinctes obsoletus obsoletus. Rock Wren. Summer resident; found nearly everywhere in the state, for the rocky ground such as it inhabits occurs almost universally. Present in winter in southern Nevada. Recorded in Mineral County as late as November 18 (Gabrielson, 1949:184).

Mimus polyglottos leucopterus. Mockingbird. Summer resident over most of the state; found throughout the year in the southern end. North at least to above the 41st parallel, in Washoe County.

Dumetella carolinensis. Catbird. Straggler, represented by one specimen; a female taken June 18, 1928, at Cave Spring. Cottam (1936:123) saw one on May 1, 1924, at Alamo.

Toxostoma bendirei. Bendire Thrasher. One record: Jewett (1940a:126) reported that on May 16, 1939, he collected one of a pair of this species about 3 miles north of Delmar, Lincoln County.

Toxostoma lecontei lecontei. Leconte Thrasher. Resident; reported in summer from several localities south of parallel 37°.

Toxostoma dorsale dorsale. Crissal Thrasher. Resident in southern end of the state, in Clark County, north to the Charleston Mountains.

Oreoscoptes montanus. Sage Thrasher. Summer resident throughout the area of tall sage brush which covers a major portion of the state, both on high and low ground. Present in winter in the southern end of the state.

Turdus migratorius propinquus. Robin. Summer resident in the higher valleys and mountains over most of the state; winter visitant to the lower valleys and the southern part of the state.

Ixoreus naevius meruloides. Varied Thrush. Winter visitant; irregular near central-western bor-

der. Reported from October to March. Alcorn (1941a:119) reported the taking of specimens on November 3 and December 29, 1940, near Fallon.

Hylocichla guttata. Hermit Thrush. *H. g. guttata* is transient; present in winter in the southern part of the state.

The race *H. g. nanus* has been recorded in winter on the Colorado River in the southern tip of the state. Alcorn (1946:136) reported a specimen taken on January 6, 1943, in Lahontan Valley.

The race *H. g. sequoiensis* is summer resident in Sierra Nevada and near-by ranges along the western border of the state.

The race *H. g. polionota* is summer resident on the Great Basin ranges over most of the state. Inhabits middle and upper slopes of mountains, nesting in groves of aspens and mountain mahoganies.

The race *H. g. auduboni* is summer resident in mountains near eastern border of the state. Specimens are from the Snake Mountains in eastern White Pine County. In Lincoln County Bond (1940b:221) reported this thrush common and a specimen taken on May 25, 1939, on Wilson Peak and present on Table Mountain.

Hylocichla ustulata. Swainson Thrush. *H. u. swainsoni* is transient; two skins taken in September, 1868, in the East Humboldt Mountains.

The race *H. u. almae* is summer resident in small numbers on some mountain ranges in the northern half of the state, south to Toyabe Mountains.

Hylocichla fuscescens salicicola. Veery. Summer resident in northeastern Nevada; reported once in June from Mountain City.

Sialia mexicana. Mexican Bluebird. *S. m. bairdi* is winter visitant; numerous in southern part of the state. Present in summer in Charleston Mountains and on Potosi Mountain, Clark County (Miller, 1945:130).

The race *S. m. occidentalis* is resident; present, in summer at least, in western and central parts of the state.

Sialia currucoides. Mountain Bluebird. Resident; most closely restricted to mountains in southern part of the state. Heavy winter snows in the mountains force the birds to the valleys.

Myadestes townsendi townsendi. Townsend Solitaire. Summer resident on the higher mountains; present in the winter in southern part of the state. Alcorn (1946:136) reported occurrence from September to February in Lahontan Valley. Recorded near Lake Mead from October to February (Grater, MS; Sullivan, MS). Also Sullivan saw a late one on April 22, 1950, at Boulder Beach (Monson, 1950:256). Monson (1951:34) reports the species on September 29 and November 23, 1950, at Boulder City.

Polioptila caerulea amoenissima. Blue-gray Gnatcatcher. Summer resident, at least as far north as the Toyabe Mountains. Found in winter in the extreme southern end of the state. Alcorn (1946:136) reported a specimen taken on April 27, 1942, at Lahontan Valley.

Polioptila melanura lucida. Black-tailed Gnatcatcher. Resident in Clark County. Grater (MS) reports the species from July to October.

Regulus satrapa olivaceus. Golden-crowned Kinglet. Resident on some of the mountain ranges in eastern part of the state.

Regulus calendula cinereus. Ruby-crowned Kinglet. Summer resident on the higher mountain ranges; elsewhere transient and winter visitant.

Anthus spinoletta pacificus. Water Pipit. Winter visitant and transient. Present from October to April.

Bombycilla garrulus pallidiceps. Greater Waxwing. Winter visitant, rare. Recorded in November, 1890, on Reese River, 30 miles south of Austin. May 30, 1949, is a late date for Carson City (Van den Akker and Wilson, 1949:218). Alcorn (1946:136) recorded the capture of a specimen on January 29, 1942, from a flock in Lahontan Valley. Cottam (1936:123) on April 23, 1924, saw a flock of about 20 at Alamo. Grater (1939d:221) collected one from a flock on the shore of Lake Mead on April 30, 1938.

Bombycilla cedrorum. Cedar Waxwing. Winter visitant; sometimes remains in summer at least as late as June.

Phainopepla nitens lepida. Phainopepla. Resident in the southern end of the state north to Esmeralda County. In the vicinity of Fallon, Alcorn (1946:136) recorded the observation of one in August, 1943, and the taking of a specimen on October 11, 1943. Cottam (1936:123) observed this species each summer from May to September in Alamo.

Lanius excubitor invictus. Northern Shrike. Winter visitant; reported from October to February and from Washoe, Ormsby, Churchill, and Lander counties.

Lanius ludovicianus. Loggerhead Shrike. *L. l. gambeli* is transient; probably occurs over most of the state.

The race *L. l. nevadensis* is resident; most common in the valleys. Probably fewer present in winter than in summer; winter birds may be migrants from northern areas.

In the Colorado River Valley *L. l. sonoriensis* is resident.

Sturnus vulgaris vulgaris. Starling. Appearance of this bird on August 12, 1938, at Las Vegas, Clark County, was reported by Cottam (1941b:293). On authority of Dryden Kuser, the Nevada State Journal of January 23, 1949, reported a specimen belonging to G. H. Brooks, of the Reno Sporting Goods Store. The bird was shot on December 27, 1948, out of a flock of 11 by H. C. Block near his ranch at Spanish Springs, 7 miles north of Reno. Sullivan (MS) in December, 1948, and January and February, 1949, saw 5 in Boulder City and he collected one specimen. W. Pulich saw one on February 7, 1949, at Overton (Monson, 1949b:181).

Vireo bellii. Bell Vireo. *V. b. arizonae* is summer resident along the Colorado River in southern Clark County.

The race *V. b. pusillus* is presumably summer resident at Ash Meadows, Nye County; one record.

Vireo vicinior. Gray Vireo. Summer resident in southern part of the state. Records for May and June in Nye County.

Vireo flavifrons. Yellow-throated Vireo. Straggler; one record at the end of May, 1932, in Pahranagat Valley.

Vireo solitarius. Solitary Vireo. *V. s. plumbeus* is summer resident in mountains of northeastern Nevada. Reported in summer on Ruby and East Humboldt mountains and as a transient in Mormon Mountains, Lincoln County.

The race *V. s. cassinii* is summer resident in mountains in western part of the state; transient over whole state, more common in fall than in spring. A male in breeding condition was obtained in mid-June, 1940, on Potosi Mountain, Clark County (Miller, 1945:131).

Vireo gilvus. Warbling Vireo. *V. g. leucopolius* is summer resident; common where deciduous trees or shrubs are present east of Sierra Nevada.

The race *V. g. swainsonii* is resident in the Sierra Nevada in the vicinity of Lake Tahoe. Alcorn (1946:136) took a specimen on September 14, 1942, in Lahontan Valley.

Mniotilla varia. Black-and-white Warbler. One record: about May 15, 1950, M. Sullivan saw one feeding on the trunks of athel trees at Boulder City (Monson, 1950b:256).

Vermivora celata. Orange-crowned Warbler. *V. c. celata* is transient and winter visitant; recorded from September to February.

The race *V. c. orestera* is summer resident on upper parts of several of the higher mountain ranges; transient in other parts of the state, and winter visitant to extreme southern part.

The race *V. c. lutescens* is summer resident on eastern slope of Sierra Nevada in central part of western border of the state; transient elsewhere in Nevada.

Vermivora ruficapilla ridgwayi. Nashville Warbler. Summer resident in vicinity of Lake Tahoe, in Washoe County. Transient elsewhere in the state; records in May and September.

Vermivora virginiae. Virginia Warbler. Summer resident; numerous in piñon-juniper covered lower slopes of the mountains. Grater (MS) reports transient specimens taken on September 13, 1938, in Hemenway Wash.

Vermivora luciae. Lucy Warbler. Summer resident along the Colorado River, April to September.

Dendroica aestiva. Yellow Warbler. *D. a. rubiginosa* is transient; a specimen collected in May, 1939, at Carp, Lincoln County, was reported by Bond (1940b:221). Aldrich (1942:447) considers all forms of the Yellow Warbler to be races of *D. petechia*.

The race *D. a. morcomi* is summer resident; common near streams and in brushy thickets over most of the state, except extreme southern and northwestern portions.

The race *D. a. brewsteri* is summer resident in northwestern part of the state, eastward to Humboldt County and south to vicinity of Walker Lake. Grater (1939b:221) took a specimen on September 19, 1938, in Hemenway Wash.

Along the Colorado River in southern Clark County, *D. a. sonorana* is summer resident.

Dendroica magnolia. Magnolia Warbler. Straggler: one specimen taken in Grapevine Mountains, Nye County, June 7, 1940 (Miller, 1946:59).

Dendroica coronata. Myrtle Warbler. Transient; specimens in May from Humboldt, Nye, and Esmeralda counties.

Dendroica auduboni auduboni. Audubon Warbler. Summer resident on the higher mountain ranges; numerous throughout state in migrations; present in the valleys through the winter.

Dendroica nigrescens. Black-throated Gray Warbler. Summer resident; present on most of the mountain ranges in the state. Inhabits mainly the piñon-covered ridges on the lower mountain slopes; reported from May 12 to September 6 in central part of the state.

Dendroica townsendi. Townsend Warbler. Transient; probably not very numerous over the state. Records in May and September.

Dendroica occidentalis. Hermit Warbler. Transient; available records only in fall, but doubtless occurs in spring and along central western border as a summer resident. Grater (1939d:221) took a specimen on September 13, 1938, in Hemenway Wash.

Seiurus aurocapillus cinereus. Oven-bird. Accidental; a dead bird was picked up on June 12, 1941, 4 miles west of Fallon by W. H. Alcorn (Alcorn, 1941b:294).

Oporornis tolmiei. Tolmie Warbler. Summer resident; abundant about moist ground at springs and streams in the valleys, and in meadows and along streams in the mountains. Recorded from May to September. The Nevada birds are included within the range of the race *O. t. monticola* described by Phillips (1947:297).

Geothlypis trichas. Yellow-throat. *G. t. occidentalis* is summer resident; occupies the low parts of valleys south to the center of the state. Records from April to September.

In southern half of the state *G. t. scirpicola* is summer resident. Recorded from April to October.

Icteria virens auricollis. Chat. Summer resident; most numerous in moist brushy areas close to bases of mountain ranges.

Wilsonia pusilla. Pileolated Warbler. A specimen of *W. p. pusilla* collected on September 20, 1941, at the McCuiston Ranch, east of Montello was assigned to this race by Cottam (1942b:127).

The race *W. p. pileolata* is summer resident, present but not numerous in higher valleys and mountains over most of the state; transient over the whole state. Recorded from May 7 to September 20.

The race *W. p. chryseola* is summer resident on eastern slope of Sierra Nevada; found most often about willow thickets in the high meadows. Transient elsewhere in the state.

Setophaga ruticilla. Redstart. Transient; four records, specimen from Fish Lake, 4800 feet, Esmeralda County, and sight records on May 21, 1942, from 9 miles northeast of Las Vegas (Broadbooks, 1946:141) and August 25 and 29, 1939, from Boulder City (Grater, MS). W. Pulich saw Redstarts at Boulder City on September 19 and October 21, 1950 (Monson, 1951:34).

Passer domesticus. English Sparrow. Resident, now widespread, about towns and ranches.

Dolichonyx oryzivorus. Bobolink. Transient; possibly present in summer at a few places in northern Nevada.

Sturnella neglecta. Western Meadowlark. Resident; mostly in the lower valleys, more common in summer than in winter.

Xanthocephalus xanthocephalus. Yellow-headed Blackbird. Resident and transient; restricted in summer to marshes, but likely to occur at any place in the state at some time of the year.

Agelaius phoeniceus. Red-winged Blackbird. Two specimens of the winter visitant *A. p. fortis* were collected in January, at Overton by Baldwin (MS) and identified by F. H. Test.

The race *A. p. nevadensis* is resident; in summer, present wherever there are marshy areas and scattered in small colonies; in winter large flocks forage over the lower valleys and about the ranches.

Along the Colorado River, *A. p. sonoriensis* is resident.

Icterus cucullatus californicus. Hooded Oriole. One specimen, June 12, 1929, at Pahrump.

Icterus parisorum. Scott Oriole. Summer resident in southern part of the state. Recorded from as far north as 10 miles east of Stillwater, northeast of Carson Lake.

Icterus bullockii bullockii. Bullock Oriole. Summer resident; present mainly in tall trees along streams and about ranches in the valleys and in lower parts of mountains.

Euphagus cyanocephalus. Brewer Blackbird. Resident; most numerous and most widely distributed of the blackbirds. In summer near streams in the higher valleys and mountain meadows; in winter frequents the lower valleys.

Quiscalus quiscula versicolor. Bronzed Grackle. Straggler; one specimen taken in May, 1932, in

Pahranagat Valley. A grackle was found dead but was not preserved on April 14, 1938, 4 miles west of Fallon (Alcorn, 1940:170).

Molothrus ater. Common Cowbird. The summer resident *M. a. artemisiae* occurs over most of the state, except the Colorado River Valley.

Along the Colorado River, *M. a. obscurus* is summer resident.

Piranga ludoviciana. Western Tanager. Summer resident; most characteristically present on Nevada mountain ranges in the belt of mountain mahogany. Present from May to September.

Piranga rubra cooperi. Summer Tanager. Summer resident in cottonwoods along Colorado River in extreme southern tip of Clark County.

Pheucticus ludovicianus. Rose-breasted Grosbeak. Grater (1939c:191) reports one observed on June 20, 1938, at Saint Thomas.

Pheucticus melanocephalus melanocephalus. Black-headed Grosbeak. Summer resident; common in shrubby vegetation bordering streams in the mountains. Sometimes occurs in mountain mahogany. Grater (MS) saw one on August 29, 1938, at Boulder City.

Guiraca caerulea. Blue Grosbeak. *G. c. interfusa* is summer resident along Colorado River in southern Clark County. One record: a male in May.

The race *G. c. salicarius* is summer resident in southern end of the state, except in Colorado River. Occurs northward through Esmeralda County.

Passerina cyanea. Indigo Bunting. Straggler: one specimen taken in Grapevine Mountains, Nye County, June 2, 1940 (Miller, 1946:59).

Passerina amoena. Lazuli Bunting. Summer resident; fairly common over most of the state, especially in the neighborhood of streams.

Hesperiphona vespertina brooksi. Evening Grosbeak. Resident, at least on the higher slopes of the mountains along the western border of the state. Gabrielson (1949:186) saw two on June 1, 1932, north of Tuscarora. Alcorn (1946:137) took one on November 26, 1944, in Lahontan Valley. On March 15, 1925, Cottam (1936:123) saw a flock of 30 or more at a spring 15 miles east of Alamo. Reported by Grater (MS) on June 4, 1936, at Saint Thomas and November 20, 1938, at Boulder City.

Carpodacus cassini. Cassin Finch. Resident; nests on nearly all the higher mountain ranges; probably of regular occurrence in the valleys in winter. Grater (MS) reports it in November and December at Boulder City.

Carpodacus mexicanus frontalis. House Finch. Resident; generally distributed through a wide range of conditions. Occurs in flocks, sometimes of great numbers, for a large part of the year. The house finches of Nevada have been separated as a race, *C. m. solitudinis*, by Moore (1939:107) with the type from Fallon.

Leucosticte tephrocotis. Rosy Finch. Specimens of the winter visitant race *L. t. littoralis* were obtained in January from Washoe and Storey counties. On March 4, 1950, N. Johnson collected 5 from a flock on Peavine Mountain (Richardson, MS).

The race *L. t. tephrocotis* also is winter visitant; specimens are from near Reno in early January. On March 4, 1950, N. Johnson collected one from a flock on Peavine Mountain (Richardson, MS).

A specimen of *L. t. wallacei* in the Museum of Vertebrate Zoology was taken by Alcorn (1943:40) on November 15, 1941, from a flock of over fifty near Ramsey, Lyon County.

Acanthis flammea flammea. Common Redpoll. Winter visitant, at least to the northern part of the state. Specimens came from Ruby Lake in early November, 1929.

Spinus pinus pinus. Pine Siskin. Summer resident; recorded from May to September, usually high in the mountains. Probably present in winter also. Gabrielson (1949:186) saw two on the Virgin River on November 20, 1934.

Spinus tristis pallidus. American Goldfinch. Summer resident. The small number of records indicates a small population which stays close to the valleys. On May 5, 1949, near Carson City, Marriage found small flocks (Van den Akker and Wilson, 1949:218). Gabrielson (1949:186) reported three occurrences in November in Nye and Clark counties.

Spinus psaltria hesperophilus. Lesser Goldfinch. Summer resident; widespread but not numerous in the state. Records are from April to November. On July 2, 1948, Cogswell (MS) saw one at Verdi. Alcorn (1946:137) took one on February 5, 1944, in Lahontan Valley. Gabrielson (1949:186) reports two on November 19, 1934, at Searchlight Ferry.

Loxia curvirostra. Red Crossbill. The race *L. c. bendirei* is irregular; four records, as follows:

East Humboldt Mountains, August 29, 1868; Shell Creek Range, August 4, 1930; Quinn Canyon Mountains, Nye County, July 27, 1933; Fallon, July 27, 1919.

Specimens of *L. c. grinnelli* from the Shell Creek Range, Quinn Canyon Mountains, and Charleston Mountains were assigned to this race by Griscom (1937:133) and this race was found breeding in the Grapevine Mountains (Miller, 1946:56, 58).

The race *L. c. benti* was present in November, 1938, on shores of Lake Mead (Grater, MS). Specimens identified by F. H. Test came from Arizona side on November 14.

The race *L. c. stricklandi* is an irregular resident; many apparently nesting in September, 1934, were among the conifers on Wheeler Peak, in the Snake Mountains.

Chlorura chlorura. Green-tailed Towhee. Summer resident; common over most of the mountain ranges in the state. Found in April, May, and September near Colorado River (Grater, MS).

Pipilo maculatus. Spotted Towhee. *P. m. curtatus* is resident in the mountains and higher valleys except in the eastern and southern parts of the state. An appreciable movement takes place in winter to lower valleys and more southern localities in the state.

The race *P. m. montanus* is resident, at least in summer, in the mountains and higher valleys in the eastern part of the state, in White Pine and Lincoln counties. Probably remains in part of this area through the winter. Grinnell and Miller (1944:470) assign to this race birds from the population that occurs in Esmeralda County.

Pipilo aberti dumeticolus. Abert Towhee. The range of this race (van Rossem, 1946:81) extends up the Colorado River Valley across southern Nevada and including the Virgin River Valley.

Calamospiza melanocorys. Lark Bunting. Irregular winter visitant; recorded in April and May, from Humboldt, White Pine, and Clark counties. Jewett (1940:307) found this bird common in southern Clark County in early February, 1940. On December 25, 1948, W. Pulich saw about 40 in a flock on the shore of Lake Mead (Monson, 1949:181).

Passerculus sandwichensis. Savannah Sparrow. The winter visitant and transient *P. s. alaudinus* has been recorded in May from Humboldt County and in January from Clark County.

The resident *P. s. nevadensis* probably stays through the winter in many parts of the state. Inhabits grassy marshes, moist meadows, and similar types of open ground in the valleys and lower canyons.

Ammodramus savannarum pratensis. Grasshopper Sparrow. Summer resident in small numbers in northeastern part of the state: Elko and Eureka counties. A transient was taken on May 7, 1934, on the Colorado River in the southern tip of Clark County.

Pooecetes gramineus confinis. Vesper Sparrow. Summer resident and transient; possibly present in winter in the southern part of the state. In summer only in the mountains and in northern part.

Chondestes grammacus strigatus. Lark Sparrow. Summer resident; occurs over most of the state, but not continuously distributed; lingers late in the fall, and possibly remains through the winter in some sections.

Aimophila cassini. Cassin Sparrow. One record: in May, 1891, in Timpahute Valley.

Amphispiza bilineata deserticola. Black-throated Sparrow. Summer resident; occurs generally over lower valleys, but not recorded above 5000 feet in northern part. Reported from April 20 to November 19. Present in vicinity of Lake Mead as late as December (Grater, MS). Gabrielson (1949:186) collected specimens in November at Nelson, Clark County.

Amphispiza belli. Sage Sparrow. *A. b. nevadensis* is resident in the valleys and flats over most of the state. Gathers into flocks in the fall and wanders over same type of ground inhabited in summer.

The race *A. b. canescens* is summer resident, at least in western Esmeralda and Nye counties, and is transient in southern Nevada. Gabrielson (1949:186) reports a specimen taken on October 9, 1932, at Coaldale, Esmeralda County.

Junco hyemalis. Slate-colored Junco. A specimen of *J. h. hyemalis* collected on October 6, 1915, at 8500 feet, Silver Peak Mountains, was reported by Cottam (1942:185). At Reno, N. Johnson saw one many times between January 19 and February 13, 1949 (Richardson, MS).

The race *J. h. cismontanus* is transient and probable winter visitant; recorded in September on Salmon River, in Elko County. Alcorn (1946:137) records a specimen taken on December 26, 1940, in Lahontan Valley.

Junco oreganus. Oregon Junco. *J. o. mearnsi* is transient; recorded once in May in Snake Mountains, White Pine County.

The race *J. o. montanus* is a winter visitant; specimens taken on November 20, 1942, in Lahontan Valley were reported by Alcorn (1946:137).

The race *J. o. shufeldti* is a winter visitant; recorded from September 6 to April 24 and on June 8.

In the mountains of western Nevada, *J. o. thurberi* is summer resident. Specimens represent dates from May 1 to October 22. A transient on April 30 was in the Toyabe Mountains, Nye County.

Hybrids of *J. o. thurberi* and *J. c. caniceps* were described as *J. o. mutabilis* and are resident on the Charleston and Sheep mountains.

Junco caniceps caniceps. Gray-headed Junco. Summer resident in desert ranges in central and eastern Nevada; possibly also present in winter. Dates of specimens range from April 24 to September 23. Recorded by Miller (1945:130; 1946:59) as present in summer on Grapevine Mountains, Nye County, and Potosi Mountain, Clark County.

Spizella arborea ochracea. Tree Sparrow. Winter visitant; probably of more regular occurrence than the few records indicate. A specimen was taken on November 25, 1939, near Fallon (Alcorn, 1940:170). Cottam (1936:123) reported Tree Sparrows as regularly present in winter at Alamo.

Spizella passerina arizonae. Chipping Sparrow. Summer resident; common on middle slopes of most of the mountain ranges in the state. Present in winter in the Colorado Valley.

Spizella breweri breweri. Brewer Sparrow. Summer resident; one of the most abundant birds in the state; lives in sagebrush at all altitudes both in the valleys and on the mountains. Dates are between March 17 and November 19. Gabrielson (1949:187) shot one on November 19, 1934, at Nelson, Clark County.

Spizella atrogularis evura. Black-chinned Sparrow. Summer resident in southern part of the state; specimens from Grapevine Mountains, Nye County, and Trout Creek, near Williams Ranch, Clark County.

Zonotrichia querula. Harris Sparrow. Winter visitant; rare, recorded from Washoe and Clark counties, the latter on November 19, 1934. On May 5, 1948, N. Johnson saw one on the Truckee River just east of Reno (Richardson, MS).

Zonotrichia leucophrys. White-crowned Sparrow. *Z. l. gambelii* is transient; common over the whole state, winter visitant in the lower valleys. Present from September to May.

On the tops of several of the higher mountain ranges, *Z. l. oriantha* is summer resident. Numerous over most of the state in migration.

Zonotrichia coronata. Golden-crowned Sparrow. Winter visitant; recorded from West Humboldt Mountains and Lake Tahoe, both in October. A specimen was taken on April 30, 1936, near Fallon (Alcorn, 1940:170).

Zonotrichia albicollis. White-throated Sparrow. Straggler; one record, in July, from Mount Grant.

Passerella iliaca. Fox Sparrow. Gabrielson (1949:187) reported a specimen of *P. i. fulva* taken on August 18, 1933, at Secret Pass.

In mountains of northern part of the state *P. i. schistacea* is summer resident; transient farther south.

A transient obtained on August 18 in the Ruby Mountains was assigned by Aldrich (1943:164) to the race he described as *P. i. olivacea*.

In the Sierra Nevada in the region of Lake Tahoe, *P. i. megarhynchus* is summer resident.

The race *P. i. monoensis* is summer resident at least on the Walker River Range in Mineral County. Gabrielson (1949:187) reported a specimen taken on August 12, 1933, west of Carson City.

The race *P. i. canescens* is summer resident in central part of the state from Esmeralda County to White Pine County.

Passerella lincolni. Lincoln Sparrow. *P. l. lincolni* is transient over most of the state; winter visitant in southern part. W. Pulich saw one at Boulder City on May 14, 1950 (Monson, 1950b:257).

The race *P. i. alticola* is summer resident in vicinity of Mount Rose. On July 15, 1951, A. H. Miller (MS) collected a breeding bird there on Galena Creek at 8500 feet.

Passerella georgiana ericrypta. Swamp Sparrow. Rare winter visitant; one specimen from Ruby Lake, December 17, 1927.

Passerella melodia. Song Sparrow. *P. m. montana* is summer resident; common from the Toyabe Mountains eastward and northward. Occurs farther south in the state during migrations and in winter.

The race *P. m. fallax* is resident in southeastern part of state. Marshall and Behle (1942:122)

assign to this subspecies the breeding Song Sparrows of Pahranagat Valley and some winter specimens from southern Clark County. They report intergradation toward *P. m. montana* in a specimen from Lehman Creek, 7500 feet, and one from Greenmonster Canyon, Monitor Range. See also Marshall (1942:233).

The race *P. m. fisherella* is summer resident; common in brushy thickets bordering streams and in the valleys in western part of the state.

The race *P. m. merrilli* is transient and winter visitant; recorded in September from Kawich Range and in October from Coyote Spring. Alcorn (1946:138) obtained specimens on November 14, 1939, and March 2, 1941, in Lahontan Valley.

In southern end of the state along Colorado River, *P. m. saltonis* is resident.

Calcarus lapponicus alasensis. Lapland Longspur. Winter visitant; reported as present around Carson City in winter of 1867.

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Hastings Natural History Reservation, Robles del Rio, California, March 15, 1951.

THE RACES OF SONG SPARROWS IN ALASKA

By IRA N. GABRIELSON and FREDERICK C. LINCOLN

The Song Sparrow (*Melospiza melodia*) has a peculiar habitat in Alaska. Its range extends along the coast from Dixon's Entrance on the east to Attu Island at the extreme western end of the Aleutians. Throughout this range it is a beach bird, which feeds, nests, and lives largely in the vegetation just above the high tide line. It obtains its food chiefly from the rocky beaches of its chosen home and uses the crevices between rocks and the openings in the talus slopes as escape cover. Only from Yakutat Bay south through southeastern Alaska does it show any evidence of moving inland during the breeding season. In this region it does leave the waterfront to nest inland for some distance along the streams. In the Aleutians it wanders away from the beaches in late summer only to return to the water's edge as cold weather approaches. The individuals that winter in southeastern Alaska also become veritable beachcombers.

The species has developed a variety of forms which have been assumed to be adaptations to climatic conditions. It is true that in Alaska the darkest and also the smallest races are found in the southeastern district, the birds becoming larger and grayer along the coast until the Aleutians are reached. Here, although the size continues to increase, it is also true that in the western Aleutians, the birds are browner than those in the eastern end of the chain. A browner form also has developed on Amak Island on the north side of the Alaska Peninsula.

In the Aleutians it is difficult to provide an ecological explanation for these facts. There is no obvious difference in weather, nor any marked difference in the relative abundance or zonal distribution of the dominant plants. There is, in fact, more noticeable difference between north and south slopes and between wet and dry sites on the same exposure than any that can be detected between islands. It seems probable that genetic variations having no vital relation to survival, plus isolation, are a more logical explanation of the variations of island forms. Furthermore, this also may be at least a partial reason for the survival of variations in sedentary forms that are not confined to insular areas.

Considering the territory occupied, this species is one of the most plastic to be found in Alaska, and it is a real experience for the ornithologist who is acquainted only with the small mainland forms of the United States to make the acquaintance of the huge dusky, Aleutian birds. Although these giants of the group sing about the same song and have the same mannerisms as their smaller cousins far to the south, it is probably true that if all the resident Song Sparrows between Kodiak Island and the Imperial Valley in California were suddenly destroyed, there are few observers who would believe that there was any close relationship between the large, dusky Aleutian birds and the small pale form about the Salton Sea.

As we have reached certain conclusions that are at variance with previous concepts of the Alaskan races of *Melospiza melodia*, all the Alaskan Song Sparrows are here reviewed.

The skins collected by O. J. Murie and his associates, in the course of several summers spent in the Aleutians, and those taken by Frank Beals and by Gabrielson when added to those already available in the United States National Museum provided a fairly adequate series of rather worn breeding birds. Study of a series of thirty-eight adult males and twenty-two adult females in breeding plumage indicates that there is an undescribed race of Song Sparrow in the western Aleutians.

McGregor (Condor, 3, 1901:8) in applying the name *sanaka* to the Aleutian Song Sparrow selected a bird from Sanak Island as the type. We have not seen this specimen but have had breeding birds from Sanak Island for comparison. His description applies to grayer birds rather than to the browner ones from farther west. We are therefore proposing to call this browner bird

Melospiza melodia maxima new subspecies
Giant Song Sparrow

Type.—Adult male, United States Fish and Wildlife Service Collection 230692, taken at Kiska Harbor on Kiska Island, June 17, 1911, by Alexander Wetmore. This specimen is in somewhat worn plumage but with wing and tail feathers relatively intact. It is representative of the average of this new race.

Diagnosis.—Separable from *sanaka*, to which it is most nearly related, by the following characters: bill slightly heavier and averaging somewhat longer, especially in the males; in breeding plumage back and head distinctly brownish in tone rather than grayish. This is due to the wider and heavier brown stripes in the center of the feathers of the back and to a darker brown color of the head. In specimens of *sanaka* in comparable plumage, the brown feather markings are narrower and more obscured, so that the general effect is an over-all grayish tone of the head and back.

The brownish appearance also is conspicuous in the fall, as at that season specimens of *maxima* in fresh plumage have darker brown centers to the feathers and browner margins which give a dark brownish tone to the back and head, whereas *sanaka* in similar plumage has back feathers with a lighter brown center and a wide olive edge which has a slight yellowish tone.

In series, a comparable difference is noticeable in the juvenal plumage. In *maxima* a brownish margin about the dark center of the back feathers gives an over-all brown tone to the back. The head also is darker brown. In *sanaka* the head is a grayer brown and in the plumage of the back, the brown centers are bordered by a wider margin of olive with a yellowish cast somewhat stronger than in fresh fall adults, giving the bird a brighter and paler color than in *maxima*.

Birds from Attu are the darkest and also measure larger than those from Atka, which island, on the basis of available specimens, seems to mark the dividing line between the two races. Birds from the islands between Atka and Unalaska are intermediate in size, especially in bill length, between the two races and also are intermediate in color between the gray birds to the east and the brown ones to the west. Some individuals are as brown as Atka birds and others are as gray as those from Unalaska, but these variants are not always in strict geographic sequence. The series of specimens in similar plumage is too limited to make a certain decision, but those available from this region are gray rather than brown and also are more comparable in size to *sanaka*.

This new race is a permanent resident of the western Aleutians from Atka (including that island) to Attu.

Average Measurements of Comparable Birds in Millimeters

Bill Depth	Culmen	Tarsus	Wing	Tail
Twenty-two breeding males, Atka to Attu (<i>maxima</i>).				
7.84	16.50	26.91	82.54	76.77
Sixteen breeding males, Seguam to Shumagins (<i>sanaka</i>).				
7.21	14.85	26.50	82.67	79.62
Fourteen females from Attu to Atka, inclusive (<i>maxima</i>).				
7.40	15.23	26.90	79.14	75.64
Eight females from Seguam to Unimak (<i>sanaka</i>).				
7.42	14.74	25.37	79.50	75.50

The tail and wing measurements vary somewhat more than normal on account of wear and are not fully reliable. A sufficient number of fresh fall skins from points west of Unalaska is not available to provide satisfactory averages, but six fall males from Unalaska average 83.83 mm. for both tail and wing measurements.

***Melospiza melodia sanaka* McGregor**
Aleutian Song Sparrow

Type locality.—Sanaka Island.

This race as now restricted by us occupies the Aleutians from Seguam Island eastward to the Alaska peninsula at least to Stepovak Bay and including Sanak, the Shumagins, and the smaller islands south of the peninsula as far east as the Semidi Islands.

Birds from the Semidi Islands have been described as *M. m. semidiensis* (Brooks, Proc. New Engl. Zool. Club, 7, 1919:27) which we do not consider recognizable for the following reason. From this group of islands we have had for study 19 adult breeding birds and four that are in fresh fall plumage. The breeding series have shorter bills, eight males having culmens averaging 14.32 in length as compared with the average of 14.85 for sixteen breeding specimens of typical *sanaka*. Four breeding females from the Semidi group have culmens that average 14.50 in length as compared with 14.74 for eight breeding females of *sanaka*. Although these birds average slightly browner than *sanaka*, they nevertheless are still gray like that race. The four fall specimens further complicate the problem. These are two males and a female taken by Gabrielson on Chowiet Island, August 5, 1945, and a female obtained by the same collector on Aghiyuk Island on August 21, 1946. All four are in fresh fall plumage which is a mottled dusky pattern more like that of *insignis* although the series is slightly grayer and paler than comparable plumage of that race.

Another female taken by Gabrielson on Chowiet on June 18, 1940, is also colored much like *insignis* although other breeding birds from these islands are much like *sanaka*. All of these *insignis*-like birds have culmen lengths below average for *sanaka* although none falls below the minimum of some individuals from points west of Unalaska. It is, however, odd that the only fall birds from this group, taken in two different seasons, should all be grayish colored, more like *insignis*, than like the brownish fall color of *sanaka*. The single *insignis*-like specimen taken on June 18 gave every evidence of being a breeding bird yet the eleven other breeding specimens are definitely of the *sanaka* type.

There are several possible solutions. These birds could be a mixed group, some coming to breed from both the east and the west, with so few or so recent infusions of the two forms that a local type has not yet become fixed. Another possibility is that this is a fairly fixed population with a breeding plumage like *sanaka* and a winter plumage like *insignis*. If the fall birds were not all so predominantly the sooty type, it would seem odd that four specimens collected at random at that season did not contain one or more of the brown plumaged individuals. A third solution would be to consider these fall birds as wanderers from Kodiak. It is evident that a more extensive series of these birds, especially in fresh fall plumage, is needed before this point can be definitely settled and their racial identity fully established. For the present we are leaving them in the *sanaka* group on the basis of breeding plumage comparisons.

The races *maxima* and *sanaka* are permanent residents. We have seen no specimens of the former from outside its breeding range and only four of *sanaka*, all of them being fall and winter birds. Two of these were taken at St. George in the Pribilofs and the others at Nushagak.

In studying the skins available, which have included 17 from the Museum of Com-

parative Zoology, those in the Gabrielson collection, the United States National Museum and the United States Fish and Wildlife Service collection, it is evident that there is an undescribed race, resident on Amak Island, a rocky island of considerable size north of the western end of the Alaska Peninsula. We are therefore naming it as

Melospiza melodia amaka new subspecies
Amak Song Sparrow

Type.—Adult male, United States Fish and Wildlife Service collection 298522, taken on Amak Island, July 13, 1925, by O. J. Murie.

Diagnosis.—Resembles *maxima* from the western Aleutians in color and extensive brown markings, but somewhat more heavily marked with brown than that race both on back and breast; in most available specimens the brown markings also somewhat brighter. Closer in color to *maxima* than to the geographically closer race *sanaka*. Bill short and stubby as in *sanaka*.

The average measurements in millimeters of the adults are: 4 males, culmen 14.75, wing 83.00, tail 79.12; 2 females, culmen 14.75, wing 77.50, tail 75.00.

Melospiza melodia insignis Baird
Bischoff Song Sparrow

Type locality.—Kodiak Island.

This is the breeding bird of Kodiak, Afognak, Sitkalidak, and Raspberry islands, including the almost innumerable smaller islands that dot the bays and inlets as well as the coast line of the larger islands. It also breeds on the Barren Islands and on the base of the Alaska peninsula from Kukak Bay for an unknown distance eastward toward Cook Inlet. No specimens were available from the area between Kukak and Stepovak Bay which is the most eastern point from which specimens of *sanaka* have been taken. Gabrielson has collected at both Chignik and Wide bays without obtaining any birds, although neither of these localities furnishes much suitable Song Sparrow habitat. He had a similar experience on Mitrofania Island which is a fairly large and very rugged body of land with little or no beach such as is preferred by Song Sparrows. From a distance many of the islands along the coast between Stepovak and Wide Bay appear to have suitable habitat and specimens are needed from this area before the ranges of the two races can be defined with accuracy.

This race is somewhat smaller than *sanaka* and is darker, with a sooty wash that noticeably obscures the markings and tends to make the color more uniform. It is, however, paler and grayer than the next race to the east.

Melospiza melodia kenaiensis Ridgway
Kenai Song Sparrow

Type locality.—Port Graham, Cook Inlet.

In selecting a type for this race Ridgway chose a specimen from what proves to be the western extremity of its range. It is not common on the western side of the Kenai Peninsula.

Grinnell (Univ. Calif. Publ. Zool., 5, 1910:402-403) in studying a series of forty-two Song Sparrows taken by members of the Alexander Alaska Expedition (of 1908) decided that this group of birds should be called *kenaiensis*. He states "I should not hesitate to name this as a new subspecies, if more material from Cook Inlet were available, so that I could be surer of the average characters of true *kenaiensis*. However, there is scarcely any doubt that, even if divergent towards *caurina*, the form under consideration is closest in the aggregate of characters to *kenaiensis*."

We have seen Grinnell's series and we also have for examination a series taken by

Gabrielson on the islands in Prince William Sound and as far eastward as the mouth of the Copper River. As a result of our study we agree with Grinnell's conclusion, although the Copper River birds are slightly closer to *caurina* than are those from the shores of the Sound.

The two specimens from Cook Inlet referred to by Grinnell are still the only ones from this area that have been available to us. Gabrielson has seen an occasional bird about the wharves in Seldovia and Homer, but he has not found them away from the towns when collecting in that region. Additional breeding specimens from this district are needed before the true relationship of this group of birds can be determined. Other birds also are needed from points along the coast between the mouth of Copper River and Yakutat Bay before the exact ranges of these two races can be worked out, although it is probable that *caurina* will be found to occupy most of that area. This surmise is based on the rather sudden darkening of birds from Cordova and Copper River when compared to the birds from the islands in Prince William Sound. These birds are smaller, black streaked and much slatier than *insignis*, but they are larger and more leaden, that is less brownish, than *caurina*.

This is the first race reviewed in this paper that shows any migratory tendencies. We have seen a number of specimens from southeastern Alaska taken between August 15 and February 6.

Melospiza melodia caurina Ridgway
Yakutat Song Sparrow

Type locality.—Yakutat Bay.

Most of the specimens of this race are from Yakutat or its immediate vicinity. Some breeding birds from as far south as Cross Sound are so intermediate between this race and *rufina* that they cannot be satisfactorily assigned to either group. The range of *caurina* therefore extends south nearly if not quite to Glacier Bay and Cross Sound and westward to some point between Yakutat Bay and Copper River. In comparison to *kenaiensis* it is smaller and darker, with the streaks more distinct on the back, whereas it has a longer bill and grayer coloration than *rufina*.

Caurina has a distinct migration which in winter carries it south in small numbers as far as central California. It is the most common wintering race in southeastern Alaska where in some seasons it is more or less mixed with *rufina*.

Melospiza melodia rufina Bonaparte
Sooty Song Sparrow

Type locality.—Sitka.

This is the breeding Song Sparrow found on the large outer islands of southeastern Alaska (Chichagof, Baranof, Kuiu, Prince of Wales) some smaller ones, and the Queen Charlotte Islands of British Columbia.

This sooty brown race, with usually rather indistinct crown and back markings, is the darkest of the Alaskan forms. When birds taken at Sitka and on the Queen Charlotte Islands in 1903 and prior years are compared to recently taken specimens from the same locality and season, they show more foxing than is apparent on specimens of similar age of the larger grayer races.

This race winters chiefly in areas south of Alaska. Swarth (Univ. Calif. Publ. Zool., 7, 1911:89) failed to find it when he arrived in the Alexander Archipelago in April, 1909. Nevertheless, it now appears that occasionally some numbers do remain through the winter season in the southern part of this island group.

Melospiza melodia inexpectata Riley
Riley Song Sparrow

Type locality.—Three miles east of Moose Lake, British Columbia.

The breeding birds of the mainland from Glacier Bay south, and of the inner islands from Admiralty to Revilliggedo, have been called *morphna* by most workers, in some cases for want of a better name. They certainly are not the same as the breeding birds of western Oregon and Washington, wintering individuals of this northern population being picked out and collected from among the more abundant resident birds. In color they are intermediate between the rusty brown *morphna* and the sooty brown *rufina*. In fresh plumage they have a distinctly greenish or olive shade due to the lighter colored edges of the back feathers.

In the large series available to us from the Alaskan breeding range as outlined, there are only two birds, one taken at Juneau on April 5 and one taken at Loring on September 21, that are rusty enough to be called *morphna*. A third specimen from Juneau collected on June 4 is more rusty than the average of the breeding birds but all three can be considered as extremely brown variants of the local race. All other breeding birds from this region can be closely matched with inland birds from the interior of British Columbia and accordingly, in our opinion, should be classified as *inexpectata*.

Gabrielson has several birds from Garforth and Willoughby islands in Glacier Bay that approach *caurina* in color but have the size and shorter bill of *inexpectata*. Two breeding specimens from Gustavus Point also seem closer to this race and we are therefore including Glacier Bay in its breeding range. In this respect we are to some extent following Swarth (Condor, 25, 1923:214-223) who included all these birds under the name *morphna*. Nevertheless, we believe that *inexpectata* is a valid race and that these southeastern Alaska birds properly belong under this name rather than under *morphna*.

There are no wintering specimens from Alaska and this race apparently leaves Alaska to winter farther south.

Wildlife Management Institute and United States Fish and Wildlife Service, Washington, D.C., March 29, 1951.

FROM FIELD AND STUDY



American Avocet on nest. Photograph taken May 16, 1940, at Tule Lake, California,
by Ed Harrison and Frances Roberts.

Pigeon Hawk Catching Dragonflies.—Although the Pigeon Hawk (*Falco columbarius*) is known to eat dragonflies with some regularity (Dawson, *Birds Calif.*, 1923:1634; Bent, *U. S. Nat. Mus. Bull.* 170, 1938:75; Kennedy, *Ecol. Monogr.*, 20, 1950:104-142), there appear to be few accounts of the capture of this prey. On the morning of October 8, 1950, I was inspecting a farm pond near Goleta, Santa Barbara County, California. It was a sunny morning, and many large blue dragonflies (*Aeschna*) were flying around and resting on leaves of emergent cattails. Suddenly, a Pigeon Hawk shot down about 25 feet from me and seized a flying dragonfly in its feet. It swung off away from me, biting at its prey in flight rather like a Sparrow Hawk carrying a grasshopper. However, it went behind some trees, before I could be certain that it was actually feeding in flight, and perched about 200 yards away. About five minutes later, the bird flew back to the pond, reaching the area about 300 feet in the air. It circled once, and then stooped at great speed to take another dragonfly a few feet above the pond. This time the hawk flew to a dead limb at the top of a live oak and ate its prey there, discarding the wings. The hawk, from its plumage, was either a female or an immature male. From its small size, I took it to be the latter. It was not especially dark, so appeared to be *F. c. bendirei* rather than *suckleyi*.—R. M. BOND, *Soil Conservation Service, Portland, Oregon*, March 21, 1951.

Frigate Bird Crossing Isthmus of Tehuantepec.—On January 25, 1951, approximately 27 kilometers east-southeast of the town of Jesus Carranza, Veracruz, Mexico, in almost the middle of the Isthmus of Tehuantepec, a Frigate Bird (*Fregata magnificens*) was seen flying over hills and jungles headed almost due south. The day was overcast, with intermittent showers, but there was only a moderate wind and there had been no severe storms for at least a week before. The direction of the bird's flight was more or less parallel to the winding course of the Rio Coatzacoalcos, a few miles to the north. The bird was not following the river, but was heading swiftly and apparently purposefully for the Pacific Ocean, sixty miles to the south. It may be that Frigate Birds regularly fly overland from one ocean to the other. The distance across the Isthmus of Tehuantepec is only a trifle over 100 miles, and no hills of more than 1500 feet elevation above sea level need be crossed.—WALTER W. DALQUEST, *Baton Rouge, Louisiana*, March 14, 1951.

Blue Grosbeak in the Badlands of South Dakota.—In the Badlands National Monument in South Dakota on the morning of July 20, 1950, a male Blue Grosbeak (*Guiraca caerulea*) was seen feeding on a tiny level stretch of nearly barren ground between two peaks high above Cedar Pass Lodge. The bird was quite unconcerned and allowed us to observe him closely for several minutes. The location was along the road in the eastern end of the Badlands nearly on the line between Pennington and Jackson counties, probably in the latter county.

Although the 1931 A. O. U. Check-list does not list South Dakota in the range of the Blue Grosbeak, Pettingill and Dana (Auk, 60, 1943:441-444) have recently reported three males observed along the White River near Stamford on June 3, 1942, and have summarized other published records. These are chiefly along the Missouri River or in the counties just west of this river along the Nebraska border of South Dakota. The records that can be accurately located are: The Pine Ridge Indian Reservation in Shannon County (Tulsen, Condor, 13, 1911:89-104); Yankton County (Youngworth, Wilson Bull., 44, 1932:43); and Tripp County, also in the Pine Ridge country (Visher, Auk, 30, 1913: 280). Over and Thoms (Birds of South Dakota, 1921:118) write concerning the Blue Grosbeak: "Known to nest along the Missouri River as far north as Pierre," but they do not cite any particular records. The present record for the Badlands is in line with the other records, although it is slightly more northwestern. It is of particular interest because the bird was in an area relatively destitute of plant and animal life. We had no way of ascertaining whether the bird was breeding nearby or had wandered into the area.—HARVEY B. LOVELL, *Biology Department, University of Louisville, Kentucky, April 18, 1951.*

On the Supposed Identity of *Emberiza hyperborea* Pallas with *Pipilo fuscus* Swainson.—In a recent paper written by the well-known Russian ornithologist, L. A. Portenko (Doklady Acad. Nauk USSR, 76, no. 1, 1951:145-147, in Russian) it has been proposed to replace the scientific name of the Brown Towhee, *Pipilo fuscus* Swainson 1827, by *Pipilo hyperboreus* (Pallas "1811"), on account of a sketch, which once formed the basis of Pallas' description of his *Emberiza hyperborea* and which recently has been examined by Portenko in the Archives of the Academy of Sciences at Leningrad. A reproduction of this decisive figure is inserted in Portenko's article, to which my attention has been drawn by Professor Hans Johansen of Copenhagen.

In my opinion, neither the description nor the figure do agree with *Pipilo fuscus*. Both apply clearly to an Aleutian race of the Song Sparrow, *Melospiza melodia*, either to *Melospiza melodia sanaka* McGregor (formerly called *cinerea* Gmelin), or to *M. m. insignis* Baird.

According to Pallas (Zoographia Rossio-Asiatica, II, 1827:35) the type of his *Emberiza hyperborea* had been collected "in terris Tschuktschicis a DD. Merk," but as I have already shown (Zool. Jahrb. (Syst.), 78, 1948:97-132) the localities attributed by Pallas to specimens of the Billings-Merck expedition are quite unreliable. In this case, too, a mistake has occurred. *Emberiza hyperborea* must have been collected by Merck (and drawn by Woronin) either at Unalaska in June, 1790, or in June-July, 1791, or else at Kodiak in July, 1790. A clear reference to this specimen is lacking in Merck's unpublished diary.

The nomenclatorial difficulty thus existing could well be overcome by arbitrarily fixing the *terra typica* on one of the two Aleutian islands in question. In that case either *M. m. sanaka* or *M. m. insignis* would become a synonym of *M. m. hyperborea* (Pallas). Instead of doing so, I prefer to propose that the name *Emberiza hyperborea* Pallas should be relegated to the rank of obligatory synonym.—ERWIN STRESEMANN, *Zoologisches Museum der Universität Berlin, Germany, April 25, 1951.*

The Status of Rough-legged Hawks in Idaho.—Arvey in his check-list of the birds of Idaho (Univ. Kansas Publ. Mus. Nat. Hist., 1, 1947:199) has indicated a questionable status for the Ferruginous Rough-legged Hawk (*Buteo regalis*) and the American Rough-legged Hawk (*Buteo lagopus s. johannisi*). Since no mention was made of these hawks in his recent corrections of this list (Arvey, Condor, 52, 1950:275) the matter is reviewed here and a definite nesting record given for *Buteo regalis* in Idaho.

Arvey reports that the American Rough-legged Hawk is a common migrant and a possible resident. The breeding range of the American Rough-leg, as given by most authors, extends from arctic North America to central British Columbia (see Friedmann, Birds N. M. Amer., pt. 11, 1950:328 and Hellmayr and Conover, Cat. Birds Amer., pt. 1, no. 4, 1949:112). Weydemeyer (Condor, 35, 1933:121)

reported several summer records of the American Rough-leg in Lincoln County, Montana, gathered over a nine-year observation period. He also reported seeing two young in flight in Flathead County on August 8, 1922. Lincoln County is adjacent to northern Idaho. Although more conclusive evidence may be desirable, the indications are that the American Rough-leg breeds in western Montana. It is quite likely that it also breeds in northern Idaho.

In the past two years I observed the American Rough-leg to be a winter resident in the south-central portion of Idaho. In this period the following sight records were accumulated from southern Cassia County, Idaho, and northern Boxelder County, Utah: At Standrod on the Utah-Idaho border, 3 on October 30, 1949, and 1 on December 27, 1950; 2 miles south of Elmo, Idaho, 2 on December 4, 1950, 1 on December 26, 1950, and 2 on January 28, 1951; three were found dead along the highway 2 miles east of Strevell (near the Utah-Idaho line) on December 3, 1950; Park Valley, Utah, 8 on January 8, 1950, 1 on December 5, 1950, and 1 on January 30, 1951.

The Ferruginous Rough-leg is considered by Arvey (*loc. cit.*) to be an uncommon migrant. In its range it is confined primarily to western North America and breeds from southern Canada to the southern United States (see Hellmayr and Conover, *op. cit.*: 93). On May 27, 1950, a nest of this species was shown to me by Mr. Robert J. Erwin in Cassia County, Idaho, about 12 miles west of Strevell and 2 miles west of Standrod. The nest was located about 12 feet from the ground in a juniper tree (*Juniperus utahensis*) and contained two downy young and an infertile egg. The sparse juniper stand in which the nest was found is situated between the Raft River Mountains of Utah and the Albion range of Idaho. These two mountain ranges are separated by approximately 10 miles of sage brush (*Artemesia*). Stands of juniper extend from each mountain range down into the sage brush areas, thinning out as they do so. Ranches and farms are located on the choicer foothill areas where hayfields supply the hawks with an abundance of small rodents. Much of southern Idaho has conditions such as these which provide an excellent habitat for this bird. In my field work in Idaho during the past two years I have made numerous other summer observations of the Ferruginous Rough-leg in this type of habitat, which is so abundant in southern Idaho.

From the evidence presented, it would therefore appear that while the American Rough-leg may possibly be a summer resident in northern Idaho, it is certainly a common winter visitant to sections of southern Idaho. The Ferruginous Rough-leg in Idaho is a common summer resident, at least in the southern portion, instead of an uncommon migrant.—RICHARD D. PORTER, Department of Vertebrate Zoology, University of Utah, Salt Lake City, Utah, March 7, 1951.

Mourning Doves Raise Triplets.—A study of table 19 in Grinnell, Bryant and Storer's, Game Birds of California (1918:594) shows one set of three eggs laid by Mourning Doves (*Zenaidura macroura*) out of sixty-six definite nest records from the state of California. Tyler (Pac. Coast Avif. No. 9, 1913:36) states that "after examining hundreds of nests" he can only recall two in which the complement deviated from two in number. A. K. Fisher (N. Amer. Fauna No. 7, 1893:33) states that at Lone Pine, Inyo County, a nest was found during the first part of June which contained three young. The paucity of records of Mourning Doves successfully raising three young in a nest seems to make the following account of interest.

For several years a pair of Mourning Doves has nested in a Norfolk Island Pine (*Araucaria excelsa*) in our front yard in Hollywood, California. The tree is about 40 feet high. Cold weather causes the needles to turn brown and subsequently to drop to the ground when the wind blows. Many of these dry brown needles lodge on the foliage near the junction of the limb with the trunk of the tree. This makes a satisfactory platform for the doves' loosely constructed nest. The early nests have been successful. Those later in the summer are usually destroyed by Scrub Jays (*Aphelocoma coerulescens*). The favorite nesting site has been on the side of the tree toward the house and it can easily be observed from an upstairs window.

This year in the middle of April it seemed to us that the nest was quite full of doves but we thought nothing of it until three young doves walked out on a limb and flew to the ground under the dining room window where they had a protected area with a border of ferns. We watched them through the window from a distance of about three feet being fed by the parents, one parent feeding all three in order at a feeding. After each feeding the three would snuggle up together as they sat on the ground. Oftentimes before the adult arrived to feed them they would walk around the small area picking at the dirt. When they were frightened, they would fly up to one of the lower limbs

of the pine tree where they waited to be fed. After being fed they sat on the limb close together. They followed this pattern of activity of flying down to the ground and then back to the tree for several days. As they gained strength, they flew around the house and perched on the limbs of an avocado tree. Here the adult fed them and often both adults would sit on the bare limb with the three young. On May 2 the young were fully fledged and flying around with the adults.—C. V. DUFF, *Hollywood, California, April 10, 1951.*

Fishing Efficiency of the Black Skimmer.—In the past fifteen years the writer has from time to time taken detailed notes on the fishing activities of several species of birds in the delta region of the Rio Grande in Cameron County, Texas. Some of the data concerning the Black Skimmer (*Rynchops nigra*) were examined recently and found to contain material that might be of general interest. Consequently, the following notes are offered in the hope that they may be of use to others making more specialized studies.

The Black Skimmer obtains its food by "skimming." The bill is held open at an angle of about 40°. Most of the mandible is immersed in the water as the bird flies along at almost exactly 18 miles per hour. The wings almost touch the water on the down stroke and the spray thrown up by the "plowing" mandible may spread over an area greater than that of the bird itself. While skimming in shallow water, mud ripples or other obstacles are frequently hit with such force that the head of the bird is jerked back rather abruptly. A less decided jerk is observed when the mandible strikes a fish. When this occurs, the bill is snapped shut and the catch is instantly raised out of the water. Very tiny minnows may be swallowed at once but the bird flies for some time with most "fingerlings." When fish of five or six inches are caught, the bird carries them (frequently pursued momentarily by other skimmers) to the shore and manipulates them on the ground until they can be properly oriented for swallowing.

The efficiency of the skimming was found to vary greatly. Birds were observed to visit a given spot repeatedly in the course of an hour although no fish were caught on any visit. When negative results were obtained after seven to ten minutes skimming, the birds usually departed; however, others might replace them at the poor location almost immediately. On the other hand, when good fishing was discovered at a place, the birds would skim for much longer periods and usually fished in the area until they had caught all the food they wanted. However, after catching one or two fish, birds sometimes left places where, at the time, there was a good school of fingerlings. No reason for such action was apparent. At times a new arrival at a good location would leave before making a catch or discovering the quality of the place. It was not discovered whether or not the same birds frequented the same places daily, but from comparative numbers present on different days it was thought quite likely that a pattern was followed by the birds and that places which proved to be good one day were visited again and again even though fish were absent most of the time. Apparently most of the places visited on any one day are unproductive.

Study areas were selected where the Skimmers worked parallel to the line of travel which could be followed by the observer. Data were recorded by an assistant while I watched with binoculars.

The maximum efficiency was observed on July 11, 1937, at the north cayo of Laguna Atascosa, 16 miles northeast of Harlingen. A small inlet which had been dry for some weeks had just been flooded to a depth of several inches by slowly rising water. The inlet was so small that the observer could keep the whole study area in the field of view at one time, and the birds could be watched so closely that it is believed that there was no chance of missing even the smallest catch. Here one fish was caught for each 6½ minutes of skimming time.

The maximum observed results for some other species were as follows: a White Pelican caught three fish in one minute; a Reddish Egret caught fifteen small minnows in three minutes, while a Least Tern fishing at the same place at the same time required four minutes to catch one fish, although several other fruitless dives were made.

While the foregoing notes were based on somewhat scattered observations, they did extend over a period of years and it is thought that the results should indicate roughly the relative efficiency of the species. If that be true, it follows that the Black Skimmer is much less efficient at fishing than wading and swimming birds such as the Reddish Egret and White Pelican and that it compares more favorably with diving birds such as the Least Tern.—L. IRBY DAVIS, *Harlingen, Texas, January 29, 1951.*

Recent Bird Records from Northeastern Colorado.—The following annotated list, based on recent field observations in north-central and northeastern Colorado, includes several species which are rare in Colorado, several which have appeared in a part of the state where previously unreported, and a few whose seasonal presence warrants mention.

Ardea herodias. Great Blue Heron. Although typically a summer resident, this bird is increasingly common in the winter months. Individuals have been observed along the Cache la Poudre River near Ft. Collins, Larimer County, in the winter of 1951 on January 4 (two), January 13, 24, and February 3. One was seen on December 2, 1950, on St. Vrain Creek near Lyons, Boulder County. In comparison, during the winter of 1947-48, no herons were seen in Boulder County between November 23 and March 17.

Centrocercus urophasianus. Sage Hen. Common in Wyoming and northwestern Colorado, this bird had not been recorded in northeastern Colorado in recent times prior to 1948-49. In that extremely severe winter, one was observed by J. Frank Cassel and myself on December 30, 1948, two miles northeast of Ft. Collins. Another was reported subsequently from Larimer County and a dead bird was found on March 6, 1949, by Glenn A. Hutson and Harold Mayfield about 25 miles north of Ft. Collins near Table Mountain. It is probable that blizzard conditions in Wyoming had forced these particular birds south.

Zenaidura macroura. Mourning Dove. This summer resident bird is periodically reported from northeastern Colorado in the winter. I photographed one individual that was sitting on a fence wire during a heavy snow storm on January 28, 1951, two miles north of Bellevue, Larimer County. The temperature at that time was below zero; within forty-eight hours it had dropped to -41°F .

Myiarchus cinerascens. Ash-throated Flycatcher. This bird is a rare summer visitor to northeastern Colorado. One was observed flying from fence post to fence post along a country road about eight miles north of Ft. Collins in early May, 1948.

Cyanocitta cristata. Blue Jay. Long recognized as a resident in the extreme eastern portion of the state, this bird is recorded to the westward only as a straggler. One was noted in a river bottom area three miles southwest of Ft. Collins on April 30, 1949. Two were observed in the Ft. Collins city cemetery on January 5 and one on February 20, 1951. In comparison, seven were seen in the eastern state-line community of Wray, Yuma County, on May 20, 1950.

Aphelocoma coerulescens. Scrub Jay. This foothills brushland bird is a common resident in southern and western Colorado but seems to be only a straggler to the northeast. Three were observed with Steller Jays in an orchard east of Lyons, Boulder County, on November 8, 1950. R. A. Ryder and J. H. Wampole counted three in Bellevue, Larimer County, on December 29, 1950, and a single individual was observed one mile northwest of Bellevue in foothills brush on February 2, 8, and 10, 1951.

Gymnorhinus cyanocephalus. Piñon Jay. These jays are nesting birds of the southern Colorado piñon-juniper woodlands, but straggle erratically into northeastern Colorado. A flock of twenty-nine was observed in company with Steller Jays on January 15, 1951, in an open ponderosa pine stand south of the entrance to Spring Canyon, five miles southwest of Ft. Collins.

Thryomanes bewickii. Bewick Wren. This rare Colorado species was observed in a cottonwood river bottom three miles southeast of Ft. Collins on May 14, 1949.

Dendroica graciae. Grace Warbler. This southwestern warbler is encountered only rarely in northeastern Colorado. A solitary male was seen in a cottonwood creek bottom at the entrance to Spring Canyon, five miles southwest of Ft. Collins, about May 15, 1950.

Seiurus noveboracensis. Northern Water-thrush. A rare migrant, this species was observed about May 15, 1950, in a cottonwood creek bottom at the entrance to Spring Canyon, five miles southwest of Ft. Collins. This is the same area in which W. L. Burnett (Condor, 17, 1915:148-151) collected a specimen thirty-five years ago.

Sturnella magna. Eastern Meadowlark. A singing individual was observed in a grassy field on the western edge of Wray, Yuma County, on May 20, 1950, together with several individuals of the more common Western Meadowlark.

Icterus spurius. Orchard Oriole. A male was observed on May 20, 1950, and a pair on May 21, 1950, in trees along the North Fork of the Republican River at the west edge of Wray, Yuma County. This species is apparently not uncommon in the extreme eastern part of the state.

Richmondena cardinalis. Cardinal. A pair of these uncommon Colorado visitors was observed in a wild plum thicket along Black Wolf Creek one mile north of Beecher Island, Yuma County, on March 25, 1950. Unfortunately, it was impossible to check the area later in the season to see whether the pair nested.

Pipilo maculatus. Spotted Towhee. On January 10, 1951, a bird of this species was noted in a thicket of a cottonwood creek bottom at the entrance of Spring Canyon, five miles southwest of Ft. Collins. On February 17, 1951, a towhee, perhaps the same individual, was seen in a bush on a nearby hillside. Presence of the species in winter, although not rare, is worthy of note. Spotted Towhees are known to nest in this same area in the spring.—RICHARD G. BEIDLEMAN, Zoology Department, Colorado A. and M. College, Fort Collins, Colorado, February 20, 1951.

Sitka Crossbill in Kansas.—The exceptionally severe storms which lashed the Pacific Northwest during late October, 1950, might be expected to have caused some irregular wanderings of birds. The first of the several storms moved inland from the Pacific Ocean on October 26, striking British Columbia, Washington, Oregon, and northern California with gale-force winds. On October 27, a pronounced cold front moved inland over Oregon and Washington; this cold front then swept eastward across the continent, reaching eastern Kansas about 7:30 a.m. on November 1.

Late in the afternoon of November 1, Manuel J. Vélez found an adult male Red Crossbill (*Loxia curvirostra*) on the University of Kansas campus, in Lawrence, Douglas County. Although the bird was still alive, it was emaciated and too weak to fly. Olin L. Webb saw three or four other crossbills, evidently of the same species, feeding in conifers near the same spot just before dusk on November 1. The captured bird died before dawn, November 2, and was brought to me for preparation as a skin. I found no sign of injury or organic disorder. The bird simply appeared to have died from starvation and exhaustion. Its gizzard contained a few tiny seeds and several bits of grit.

I have identified the specimen (no. 29846 Univ. Kansas Mus. Nat. Hist.) as *Loxia curvirostra sitkensis* Grinnell (= *minor* in Griscom, cited below), the breeding Red Crossbill of the "humid coastal strip of the northwestern Pacific coast district from southern Alaska south . . . to the coastal ranges of Washington and northwestern Oregon" (Griscom, Proc. Boston Nat. Hist., 41, 1937:121). Although the plumage of the specimen is only slightly worn, its wing measures 79.4 mm., which is a smaller wing measurement for an adult male than any recorded by Griscom (*loc. cit.*) for this "smallest of New World crossbills." Other measurements are: tail, 46.0 mm.; tarsus, 15.6; culmen, 15.0; bill depth, 8.7. In color of the body plumage, the specimen is primarily red (Dragon's-blood Red on crown and back, Coral Red on under parts, except abdomen, which is Coral Pink), with many greenish-yellow feathers interspersed. It was not molting. The testes were not enlarged.

There is, of course, no proof that the crossbills recorded here actually moved out of their normal breeding range as a direct result of the storms mentioned above. However, the severity of those storms, the unseasonably warm weather over much of the United States preceding the storms, the breeding range of the subspecies represented by the specimen captured, and the emaciated condition of the specimen all seem to indicate that the storms were probably responsible for this flight.

This is the earliest fall record (by eight days) for any crossbill in Kansas, and the second time that the subspecies *sitkensis* has been taken in this state. The previous record is of three males and three females collected on January 25, 1920, at Lawrence.—HARRISON B. TORDOFF, University of Kansas Museum of Natural History, Lawrence, Kansas, November 8, 1950.

Caprimulgus ridgwayi in Michoacán, México.—One of the most interesting birds Roger Hurd and I encountered during our brief sojourn along the Rio de la Alberca, near Chupio, about 12 kilometers south of Tacámbaro, Michoacán, in the early spring of 1949, was the Collared Whip-poor-will (*Caprimulgus ridgwayi*). We noted the species daily from March 5 to 9, finding it invariably in dry gorge bottoms. Although we made a point of listening for it at night, we never heard it. On two occasions we flushed two birds at once, but none of the four specimens collected (one male and three females) was in breeding condition.

Our four specimens closely resemble Nelson's type of "*Antrostomus ridgwayi*" in both size and color. As a series they are quite uniform, none of them exhibiting paleness of crown at all comparable to that of Nelson's type of "*Antrostomus goldmani*," which possibly is a variant of *ridgwayi*.

(van Rossem, Trans. San Diego Soc. Nat. Hist., 6, 1931:251). A specimen from the supposed range of *goldmani* in the collection of the University of Michigan Museum of Zoology (116,894), a male bird from Santa Isabel, Nayarit, resembles closely, especially in crown-color, the type of *ridgwayi*.

In an attempt to learn more about color variation in *Caprimulgus ridgwayi*, I assembled a total of 15 specimens—the two above-mentioned types from the U. S. National Museum; three specimens from Honduras (*C. r. troglodytes*), from the Museum of Comparative Zoology; two Oaxacan specimens from the Percy W. Shufeldt collection; one from each of the states of Sonora, Nayarit, Guerrero, and Chiapas, from the collection of the University of Michigan Museum of Zoology; and my four Michoacán specimens. Of the 15, nine are males. The variation in tail-pattern among these males is great. In one Honduras specimen the thumb-mark on the inner web of the outermost rectrix measures 51 mm. in length. In my single Michoacán male, this spot measures only 43 mm. long. Females presumably do not have white thumb-marks on the tail, but a supposed female from Oaxaca, a specimen with only 8 rectrices, is boldly marked with white at either side of the tail.

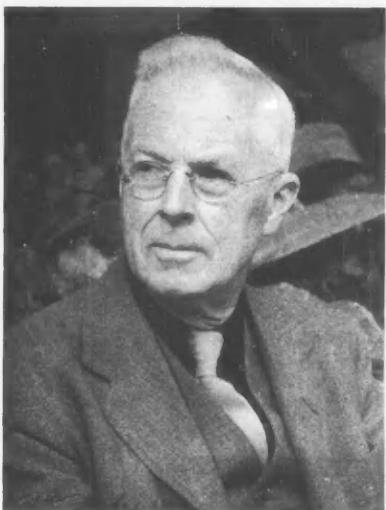
Comparison of *C. ridgwayi* with various races of *C. vociferus* has revealed that the buffy collar, which is so noticeable on the back of the neck in *ridgwayi*, is not always wholly diagnostic of that species. The "female in the rufous phase from Pátzcuaro, Michoacán" mentioned by Griscom in his original description of "*Caprimulgus ridgwayi minor*," has, I find on examining the label, been identified by the late A. J. van Rossem as *C. vociferus arizonae*. I have checked this species-identification carefully with other Michoacán examples of *C. vociferus* in hand, and I consider it correct. The specimen (MCZ 102992) does have a definite, indeed a rather noticeable, buffy collar on the back of the neck, a character which doubtless led Griscom to call it *ridgwayi*. The bird is not definitely barred on the flanks and belly as is *ridgwayi*, however; and the fact that the barring of the inner web of the outermost primary is confined largely to the edge indicates it to be *vociferus*. In all 15 *ridgwayi* at hand, both males and females, the outermost primary is boldly marked with bars which almost meet at the rachis.—GEORGE MIKSCH SUTTON, University of Michigan Museum of Zoology, Ann Arbor, Michigan, May 4, 1950.

Lapland Longspur in Arizona.—On February 5, 1951, Mr. Samuel A. Wiener, a graduate student at the University of California, Los Angeles, picked up two dead birds in a snowbank at the junction of U. S. Highways 260 and 63 in Petrified Forest National Monument, Navajo County, Arizona. Apparently the birds had been struck and killed by an automobile; they were slightly crushed, and neither was emaciated. Both were prepared as study skins. One, an adult female which weighed 32.0 grams, is a Utah Horned Lark (*Eremophila alpestris utahensis*), kindly identified by Dr. W. H. Behle. I have identified the other after comparison with a series in the Dickey Collection as a Lapland Longspur (*Calcarius lapponicus alascanus*). I was unable to sex this bird, but it appears to be an adult female and it weighed 22.3 grams. This specimen seems to represent the second known occurrence of the species in Arizona. Dr. Allan R. Phillips informs me that the only other record known to him is another unsexed example of the race *alascensis* which he collected at Meteor Crater, 36 miles east of Flagstaff, Coconino County, on November 15, 1947.—THOMAS R. HOWELL, Department of Zoology, University of California, Los Angeles, California, March 29, 1951.

Short-eared Owl Eaten by Horned Owl.—Although the Horned Owl (*Bubo virginianus*) is known to capture and eat almost any kind of animal within limits imposed by its own size, there are but few records of capture of other large owls.

On May 23, 1950, I found a nest of a Horned Owl in Uintah County, 5 miles northeast of Roosevelt, Utah, which contained the following animal components: the synsacrum and legs of a freshly killed Short-eared Owl (*Asio flammeus*), the pelvis and legs of a young muskrat (*Ondatra zibethica*) and an adult jack rabbit (*Lepus townsendi*), the fresh feathers of an adult female Ring-necked Pheasant (*Phasianus colchicus*), an immature Black-billed Magpie (*Pica pica hudsonia*), an adult Mourning Dove (*Zenaidura macroura*), a domestic pigeon, and the dried feet of an American Coot (*Fulica americana*). This diet was furnished for three nestlings.—MERLIN L. KILLPACK, Biological Department, Roosevelt Union High School, Roosevelt, Utah, February 5, 1951.

NOTES AND NEWS



Walter K. Fisher, member of the Club since 1900 and Editor of the *Condor*, 1902-1905.

The frontispiece showing the Derby or Kiskadee Flycatcher in this issue of the *Condor* is the fourteenth in the series of paintings of Andrew Jackson Grayson presented in color. The Cooper Club is indebted to the James Irvine Foundation for this plate; their generous gift was made to commemorate the Society of California Pioneers of which Grayson was a charter member.

Of the Derby Flycatcher, Grayson wrote in his notes: "It is . . . frequently met with in the neighborhood of fresh water streams and lagoons, and I have often observed them dart into the water, after water insects and minnows that were swimming near the surface, not unlike the Kingfisher, but they usually pursue and capture on the wing the larger kinds of insects.

"The nest of this species is very large. It is dome-shaped, or covered, with the entrance on the side [and] is usually placed in the forks of the branches of very thorny trees, twenty-five or thirty feet from the ground. It is composed of very coarse material of either straw or lichens, sometimes both. The lining however, is of finer and more elastic fibres.

"It was in the nest of this bird that I discovered the Red-eyed black bird [= Cowbird, *Tan-*

gavicus aeneus] in its attempt to examine it, doubtless for the purpose of depositing her eggs. But the vigilance of the flycatcher was too acute to permit this. . . . The sly intruder was discovered and hurried away, just as it was about to enter the nest. I was much interested in this manoeuvre, as I was in hopes that the blackbird would have succeeded, and thus settle a doubt as to whether [it] deposits its eggs in other bird's nests as its near ally *M. Pecoris* [*Molothrus ater*] is known to do."

COOPER CLUB MEETINGS

GOVERNORS' MEETING

The twenty-sixth annual meeting of the Board of Governors of the Cooper Ornithological Club was held at Asilomar, Pacific Grove, California, on April 20, 1951. President Ed N. Harrison called the meeting to order at 7:30 p.m., with the following members present: Howard L. Cogswell, C. V. Duff, Wade Fox, Dorothy Groner, Wilson C. Hanna, Ed N. Harrison, Hildegarde Howard, Junea W. Kelly, C. B. Lastreto, Jean M. Linsdale, Alden H. Miller, Robert T. Orr, J. R. Pemberton, William J. Sheffler, Charles G. Sibley, and Kenneth E. Stager. Guests present were: Lois Taylor, Hilda W. Grinnell and Stanley G. Jewett.

Minutes of the twenty-fifth meeting were read and corrected. The report of the business manager was submitted by C. V. Duff; some of the points noted were as follows: the directors had authorized the sale of the "G" bonds held by the Club and the investment of the funds in stocks approved by the investment committee; the Club had weathered successfully the critical period resulting from the raising of membership dues; very few members were lost because of this increase.

The report of the editor was presented by A. H. Miller with discussion of the manuscript docket. Because of the wide scope of articles submitted, the editors have enlisted the help of an advisory committee which will help the editors pass on the merits of various papers offered. The report stated that Avifauna number 30, the Fifth Ten Year Index is ready for publication.

Dr. Frank Pitelka was nominated for president of the Board, Dr. Robert T. Orr for vice-president, and Dr. Charles G. Sibley for secretary. Mr. Duff moved that the nominations be closed and the secretary be instructed to cast a unanimous ballot; motion carried.

A call for new business was made and Mr. Duff

stated that he felt that the name of the Club should be changed to Cooper Ornithological Society. Dr. Miller added that he found that considerable confusion does result from the use of the word "Club" and felt that "Society" would be a great improvement. A number of other governors agreed stating that they too had experienced difficulties with the name "Club." Mr. Duff then moved that the directors of the corporation consider the matter of changing the name from "Club" to that of "Society." The motion was seconded by Mr. Lastreto and unanimously passed.

Mr. Hanna commented on the book, "Lifelong Boyhood" by Loyal Miller, and made the motion that the Club acknowledge appreciation of Dr. Miller's book and the secretary be instructed to send Dr. Miller such appreciation in writing. The motion was seconded by Mr. Sheffler and passed. Mr. Hanna then moved that the Club send an expression of gratitude to both Loyal Miller and W. Lee Chambers for the long years of service rendered the Club and regret that they could not now attend the meetings.

Mr. Harrison then opened a discussion on the matter of scientific collecting permits and the increasing difficulties encountered by serious students in obtaining federal and state permits. Mr. Hanna made the motion that the Club write the Fish and Wildlife Service, recommending that more consideration be shown in the issuance of permits to qualified students interested in scientific collecting—KENNETH E. STAGER, *Secretary*.

SOUTHERN DIVISION

MARCH.—The regular monthly meeting of the Southern Division of the Cooper Ornithological Club was held on March 27, 1951, at the Allan Hancock Foundation, University of Southern California. The following names were proposed for membership: Mrs. Ruth L. Bass, 2804 Highview Ave., Altadena, Calif., by Wade Fox, Jr.; G. Dale Hamilton, 2550 Murray St., Shreveport 51, Louisiana, by Horace H. Jeter; Brian McNab, 2216 E. Burnside St., Portland, Oregon, by S. G. Jewett; William B. Stallcup, Museum of Natural History, University of Kansas, Lawrence, Kansas, by Sidney B. Peyton; James M. Walters, 2527 Midvale Ave., Los Angeles 64, Calif., by Thomas R. Howell; Paul Arons, 13956 Magnolia, Van Nuys, Calif., Swen Armstrong, Box 198, Stockholm 19, Sweden, Thomas A. Butler, 2971 San Isabel Ave., Pueblo, Colorado, Georgia Henderson, 63 Old Forest Hill Rd., Toronto, Canada, Thomas William Hicks, 5625 Alta St., Jacksonville 6, Florida, Mrs. Lila M. Mann, 2632 Sichel

St., Los Angeles 31, Calif., and Thomas Henry Manning, 37 Linden Terrace, Ottawa, Ontario, Canada, all by C. V. Duff.

John Davis, chairman of the Research Committee, asked cooperation on a project covering a survey of the Los Angeles coastal plain of the nesting of 10 species of birds, Spotted Dove, Ringed-turtle Dove, Band-tailed Pigeon, Screech Owl, Red-shafted Flicker, Acorn-storing Woodpecker, Scrub Jay, Western Robin, Cardinal (other than San Gabriel River), and Song Sparrow. Mimeographed forms to standardize the method of correlating data may be obtained from either Dr. Davis or Kenneth Stager. Value of the survey will be proportionate to the number of years covered.

Arnold Small of the Zoology Department of the University of Southern California presented an account of his trip taken last December to the eastern coast of Mexico. In addition to Kodachrome slides, Mr. Small's talk was illustrated with bird skins and with a tape recording of bird voices made in the area by Mr. Irby Davis.—DOROTHY E. GRONER, *Secretary*.

NORTHERN DIVISION

APRIL.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held on April 5, 1951, at the Morrison Planetarium, California Academy of Sciences, Golden Gate Park, San Francisco, California. President Juneau W. Kelly presided; 75 members and guests were present. The following were proposed for membership: Peter O. Seymour, 851 Warren Way, Palo Alto, Calif., by Chas. G. Sibley; Paul G. Howes, Bruce Museum, Bruce Park, Greenwich, Conn., by A. H. Miller; C. Lovett, 1461 Alice St., Oakland 12, Calif., by M. Milwain.

Mr. Bowers reported the capture and release after banding of a Saw-whet Owl in Tilden Park during mid-March.

Dr. Robert T. Orr welcomed the Club to the Academy. He then introduced Dr. R. C. Miller who spoke briefly on the future of the Academy. Dr. Orr gave an account of the history of the Academy and the personalities connected with it. Mr. Rattenbury of the Academy showed a motion picture of waterfowl in the central valley of California.

After adjournment, Dr. Orr conducted a tour of the new quarters of Bird and Mammal Department and the Morrison Planetarium.—HENRY E. CHILDS, JR., *Secretary*.

Concerning Cooper Club Memberships and Subscriptions
Address C. V. DUFF, Business Manager,
1922 Tamarind Avenue, Hollywood 28, California

For Sale, Exchange, and Want Column—Each Cooper Club member is entitled to one short advertising notice in any issue of the Condor free. Notices of over 3 lines will be charged for at the rate of 25 cents per line. Send advertisements to SIDNEY B. PEYTON, Treasurer, R. D. No. 2, Box 260, Fillmore, California.

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